



**DEPARTMENT OF THE NAVY**

**COOPERATIVE RESEARCH AND  
DEVELOPMENT AGREEMENTS  
ANNUAL REPORT**

**FISCAL YEAR 2016**

Prepared by:

Department of the Navy  
Technology Transfer Program Office  
Arlington, VA

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## Listing of Acronyms

CRADA	Cooperative Research and Development Agreement
DON	Department of the Navy
EODR	Explosive Ordnance Disposal Robotics
FY	Fiscal Year
IHEODTD	Indian Head Explosive Ordnance Disposal Technology Division
LP-CRADA	Limited Purpose-CRADA
MODD	Mixed Odor Delivery Device
NAWC	Naval Air Warfare Center
NDTTIS	Navy Defense Technology Transfer Information System
NSWC	Naval Surface Warfare Center
NUWC	Naval Undersea Warfare Center
PIA	Partnership Intermediary Agreement
PO	Program Office
R&D	Research and Development
SSC Pacific Std/Non-Std	Space and Naval Warfare Systems Command, Systems Center Pacific Standard/Non-Standard
T2	Technology Transfer
TA-CRADA	Technical Assistance-CRADA
UGV	Unmanned Ground Vehicle

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## Introduction

This report summarizes Department of the Navy (DON) Cooperative Research and Development Agreement (CRADA) activity for Fiscal Year (FY) 2016 and provides a cumulative record of all DON CRADA income and history from FY89 through FY16.

- Appendix A summarizes the cumulative number of CRADAs signed by each DON laboratory as well as overall annual CRADA income and the annual number of CRADAs signed.
- Appendix B includes individual income and history bar charts for any DON laboratories that have reported 10 or more CRADAs in FY89 through FY16.
- Appendix C lists the CRADA non-federal partner and subject for each FY16 CRADA.

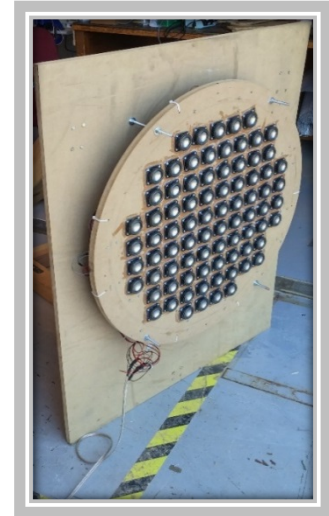
DON CRADAs are legal agreements between a DON Research and Development (R&D) laboratory and one or more non-federal partners such as private business, academia, and state and local governments. They are used to conduct joint R&D efforts in a given technical area consistent with the laboratory's mission and to share technical results derived from the joint effort. CRADA partners can save money and valuable time in achieving mutually desirable results. A non-federal partner can provide facilities, equipment, personnel, and funding to the CRADA. The DON laboratory can provide the same resources with the exception of funding to the non-federal partner.

Only DON designated laboratories are authorized to enter into CRADAs. In FY16, three new laboratories were added to the DON technology transfer (T2) community: Joint Base Pearl Harbor, Hickham, HI; Navy Entomology Center of Excellence, Jacksonville, FL; and Marine Corps Systems Command, Quantico, VA.

CRADAs are valuable mechanisms used to strengthen the United States industrial base by transferring technology developed by the DON to the private sector. In addition, the transfer and acceptance of commercial off-the-shelf technology for government use can reduce the cost of items purchased by the federal government. Benefits, other than direct cash funding, result in the cost savings accrued as the result of leveraging the personnel, technical competence, facilities, equipment, and property of the other partner or partners to achieve a specific technology development. This benefit is termed "cost avoidance." It is the additional cost in labor, facilities, equipment, and property that a partner would have experienced in achieving the desired technology development had the partnership not been in place. Cost avoidance experienced by the individual partners of a CRADA is usually different for each partner but is sufficient to cause the partner to become a member of the partnership. Cost avoidance is not documented but is an important consideration in each CRADA decision for both the DON laboratory and the private partner.

The value to the DON, as well as to the United States industrial base, can be demonstrated by the technologies listed below, which highlight a few recent CRADAs.

- Naval Air Warfare Center (NAWC) Aircraft Division, Patuxent River signed a Limited Purpose (LP)-CRADA with a small business called Scientific and Biomedical Microsystems to evaluate an acoustic energy harvesting device for its commercialization potential. The device collects acoustic energy from sound and converts it into electric power. Under the LP-CRADA, the lab will provide the small business with technical data and a copy of the filed patent application. The invention innovatively absorbs acoustic energy using loudspeakers that act as transducers. It then passes the electricity into a battery through an efficient DC energy supply. The device has the potential to be just as effective in creating usable electric power as solar panels, but at a much lower cost. The inventor, who is currently an engineer at the lab, first presented this idea at a high school science fair.



- Naval Surface Warfare Center (NSWC), Indian Head Explosive Ordnance Disposal Technology Division (IHEODTD) works with the Joint Improvised Explosive Device Defeat Organization to provide and improve theater-relevant canine training aids for the services. Working with local law enforcement provides NSWC IHEODTD access to dogs that have not been exposed to the same explosive materials as military canines. A recent CRADA in 2016 with the National Association of Canine Scent Work will investigate the use of Naval Research Laboratory's Mixed Odor Delivery Device (MODD) in determining the most appropriate way in which the MODD technology can be used to test canines for the detection of binary explosive mixtures commonly found in homemade explosives. Two CRADAs in 2014 and 2015 enabled further research into the use of canines in the detection of explosive devices.



- Space and Naval Warfare Systems Command, Systems Center Pacific (SSC Pacific) won the 2016 Federal Laboratory Consortium's Excellence in Technology Transfer Award for its Explosive Ordnance Disposal Robotics (EODR) technology. EODR is a system architecture for interoperability and operator control capability for unmanned ground vehicles (UGVs) designated for explosive ordnance disposal duties. SSC Pacific has developed several robotics-related software systems, including a common operator interface software framework called the Multi-Robot Operator Control Unit and a software library for the Joint Architecture for Unmanned Systems interoperability standard. SSC Pacific also maintains a Robotics Systems Pool that makes the UGV platforms and technology available for transfer via LP-CRADAs to industry, academia, and state and local governments for R&D purposes.





The DON uses a standard CRADA format as well as two specialty CRADA formats: Technical Assistance (TA)-CRADA and LP-CRADA. The TA-CRADA allows local companies to utilize a laboratory's facilities and technical expertise for a limited time (a maximum of four days) for a specific project. LP-CRADAs are restricted to the exchange of existing equipment or material that the collaborators need for their own research, development, test, evaluation, or engineering activities. There is no joint work performed under the LP-CRADA, but there is a mutual interest in the results. In Appendices A and B, TA-CRADAs are included in the LP-CRADA column.

Signature authority for DON CRADAs was completely decentralized in FY00. The DON T2 Program Office (PO) receives a copy of all signed CRADAs for inclusion into the Navy Defense Technology Transfer Information System (NDTTIS) database. The entire income for each CRADA, including amended sums from terminations and modifications, is credited to the year the original CRADA is received. As a result, CRADA income for a particular year may fluctuate up or down.

## Other Technology Transfer Activity

The NDTTIS database captures information on other government funding, first responder technologies, and partnership intermediary agreements (PIAs).

- The DON received \$3,812,936 in FY16 from other government funding to support individual CRADAs. This includes funds from Small Business Innovation Research/Small Business Technology Transfer, grants, and contracts.
- In FY16, four CRADAs were identified as first responder technologies. Table 1 identifies the laboratory, non-federal partner, and the first responder CRADA subject.
- A PIA is an agreement between the DON and the agency of a State or local government or a nonprofit entity as defined in Section 3715 of Title 10, United States Code. It is used to allow the intermediary to identify new technologies in the private sector that can be utilized by the DON to accelerate delivery of technological capabilities to the nation, and to help identify DON technologies that can be licensed and commercialized. Table 2 details the PIAs entered into in FY16.

**Table 1. FY16 First Responder Technologies**

Lab Name	Non-Federal Partner	Subject
NSWC, Dahlgren Division	Arizona State University	Joint Chemical Sensor Development
NSWC, IHEODTD	Viavi Solutions	Development of Viavi Solutions MicroNIR Algorithms and Spectra Libraries for the Identification of Bulk Solid and Liquid Materials as well as for Factor for Use by the EOD Warfighter
Naval Research Laboratory	UNIK - University Graduate Center	CT-Analyst® Project for Oslo, Norway
NAWC, Training Systems Division	Castellum Development, Inc.	Evaluation of the Advanced Use of Force Training System

**Table 2. FY16 Partnership Intermediary Agreements**

Lab Name	Non-Federal Partner	Subject
NSWC, Crane Division	Ohio Aerospace Institute	PIA to Promote Cooperative Activities Between NSWC, Crane Division and Ohio Aerospace Institute Members, Small Business Firms and Educational Institutions Served by Ohio Aerospace Institute
NSWC, Dahlgren Division	Maryland Department of Commerce	PIA to Promote Cooperative Activities Between NSWC, Dahlgren Division and Small Business Firms and Educational Institutions Served by Maryland Department of Commerce
Naval Undersea Warfare Center (NUWC), Division Newport	City of Newport Rhode Island	PIA to Promote Cooperative Activities Between NUWC, Division Newport and Small Business Firms and Educational Institutions Served by the City of Newport, Rhode Island



## APPENDIX A

### **DON CRADA Income and History Cumulative Record, FY89 through FY16**

**Table A-1. DON CRADA Cumulative Record from FY89 through FY16**

Lab Name	Cumulative Number of CRADAs
Fleet Readiness Center East	6
Fleet Readiness Center Southwest	8
Marine Corps Combat Development Command	2
*National Naval Medical Center	65
Naval Air Warfare Center	
Aircraft Division, Lakehurst	13
Aircraft Division, Patuxent River	207
Training Systems Division	58
Weapons Division, China Lake	253
Weapons Division, Point Mugu	54
Naval Aviation Depot	
Jacksonville	1
North Island	2
Naval Facilities Engineering and Expeditionary Warfare Center	35
Naval Medical Center	
Portsmouth	160
San Diego	288
Naval Medical Research and Development Command	957
Naval Meteorology and Oceanography Command	21
Naval Postgraduate School	282
Naval Research Laboratory	499
Naval Sea Systems Command	2
Naval Surface Warfare Center	
Carderock Division	232
Corona Division	3
Crane Division	138
Dahlgren Division	171
**Indian Head Explosive Ordnance Disposal Technology Division	202
Panama City Division	6
Port Hueneme Division	3
Naval Undersea Warfare Center	
Division Keyport	13
Division Newport	306
Naval War College	21
Navy Clothing and Textile Research Facility	7
Navy Disease Vector Ecology and Control Center	1
Navy Experimental Diving Unit	2
Office of Naval Research	11
Space and Naval Warfare Systems Command, Systems Center Atlantic	26
Space and Naval Warfare Systems Command, Systems Center Pacific	187
United States Atlantic Command	1
United States Naval Academy	62
United States Naval Observatory	1
<b>TOTAL</b>	<b>4,306</b>

\* As of November 10, 2011, the Walter Reed National Military Medical Center was created from the National Naval Medical Center and the Walter Reed Army Medical Center. Due to the realignment, CRADAs from the National Naval Medical Center are no longer being reported to the DON.

\*\*As of February 28, 2013, the NSWC, Indian Head Division and the Naval Explosive Ordnance Disposal Technology Division were merged to form the NSWC, Indian Head Explosive Ordnance Disposal Technology Division. The new Command retains the mission, functions, and technical capabilities of both organizations.

**Table A-2. DON CRADA History**

Fiscal Year	CRADA Income*	Number of CRADAs Signed			
		Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$93,274,837	1,357	321	1,678	1,678
<b>2005</b>	\$13,761,266	127	51	178	1,856
<b>2006</b>	\$17,685,070	149	45	194	2,050
<b>2007</b>	\$13,973,555	160	41	201	2,251
<b>2008</b>	\$9,222,720	147	51	198	2,449
<b>2009</b>	\$9,925,482	153	46	199	2,648
<b>2010</b>	\$19,458,868	174	48	222	2,870
<b>2011</b>	\$13,753,407	155	45	200	3,070
<b>2012</b>	\$17,323,616	141	51	192	3,262
<b>2013</b>	\$11,123,569	151	76	227	3,489
<b>2014</b>	\$18,584,759	169	77	246	3,735
<b>2015</b>	\$24,765,529	182	79	261	3,996
<b>2016</b>	\$6,748,063	171	139	310	4,306

\* The entire income for each CRADA is credited to the year that the CRADA was received at DON T2 PO. Funds received under any amendments are allocated to the year the original CRADA was received.

\*\* TA-CRADAs are included in the LP-CRADA column.

**Table A-3. FY16 Amendments to CRADAs Received**

Lab Name	Amendments Applied to Current Year CRADAs	Amendments Applied to Previous Year CRADAs
Naval Air Warfare Center Aircraft Division, Patuxent River		\$75,000
Naval Medical Research and Development Command	\$20,000	\$1,280,773
Naval Research Laboratory		\$140,218
Space and Naval Warfare Systems Command, Systems Center Pacific		\$10,000
United States Naval Academy		\$49,026
<b>Totals</b>	<b>\$20,000</b>	<b>\$1,555,017</b>

## Appendix A DON CRADA Income and History

### Cumulative Record; FY89 through FY16

The DON has entered into 4,306 CRADAs and received \$269,600,741 from non-federal CRADA partners to support this work since 1989. These funds directly support ongoing research projects at the DON laboratories. Income from new CRADAs signed in FY16 (\$6,728,063) as well as amendments to CRADAs signed in FY16 (\$20,000) totaled \$6,748,063 (see Table A-2). Amendments to CRADAs signed in previous years generated additional income in FY16 of \$1,555,017 (see Table A-3) for a grand total of FY16 income of \$8,303,080.



Figure A-1. DON CRADA Income

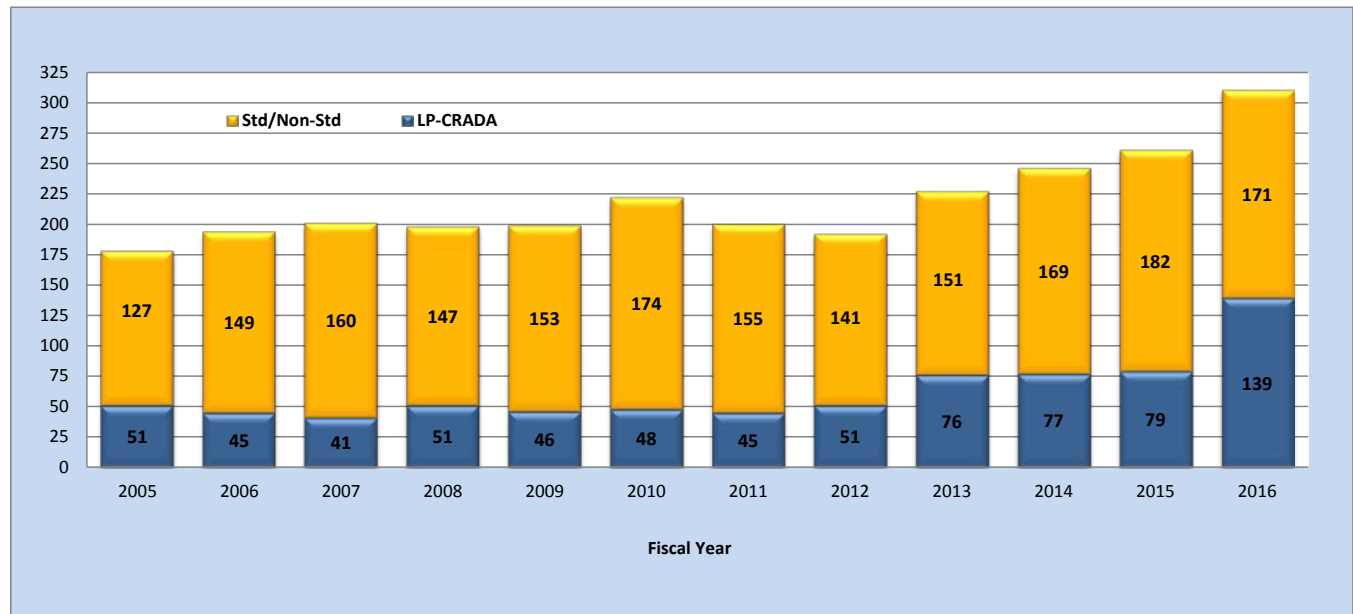


Figure A-2. Number of DON CRADAs Signed



## APPENDIX B

### **FY16 DON CRADA Income and History by Laboratory**

## Appendix B FY16 DON CRADA Income and History by Laboratory

### CRADA History for Naval Air Warfare Center Aircraft Division, Lakehurst

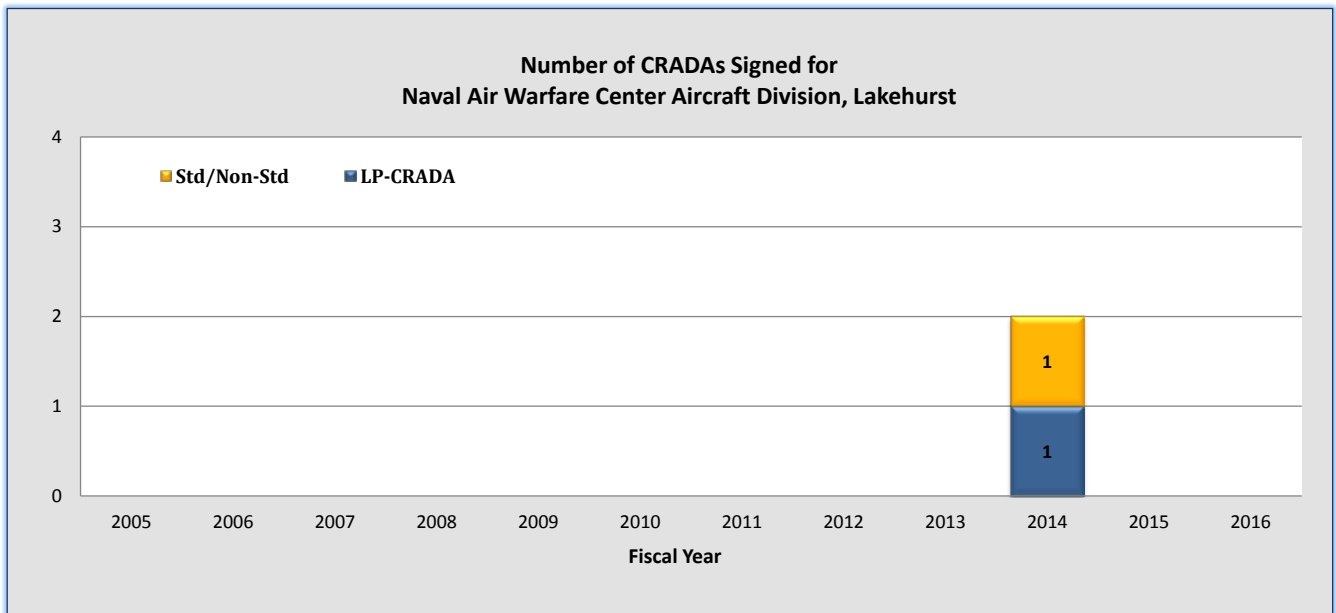
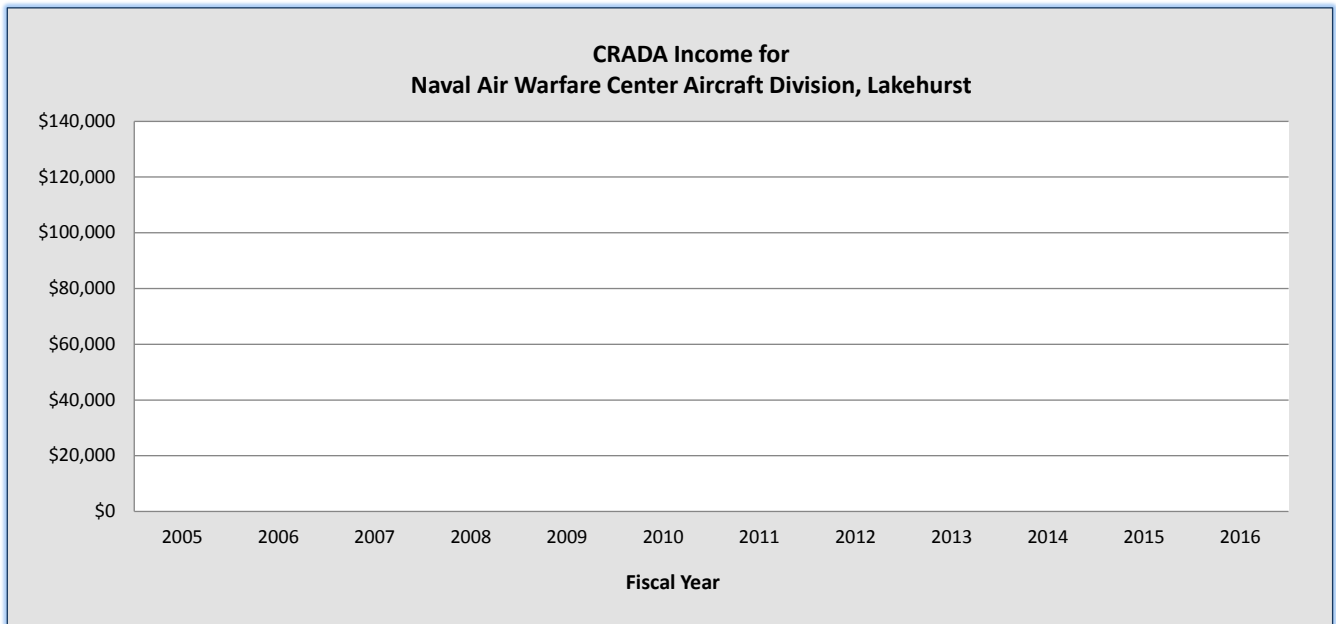
Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$398,300		11	-	11	11
<b>2005</b>	\$0		-	-	-	11
<b>2006</b>	\$0		-	-	-	11
<b>2007</b>	\$0		-	-	-	11
<b>2008</b>	\$0		-	-	-	11
<b>2009</b>	\$0		-	-	-	11
<b>2010</b>	\$0		-	-	-	11
<b>2011</b>	\$0		-	-	-	11
<b>2012</b>	\$0		-	-	-	11
<b>2013</b>	\$0		-	-	-	11
<b>2014</b>	\$0		1	1	2	13
<b>2015</b>	\$0		-	-	-	13
<b>2016</b>	\$0		-	-	-	13

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

\*\* TA-CRADAs are included in the LP-CRADA column.



## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

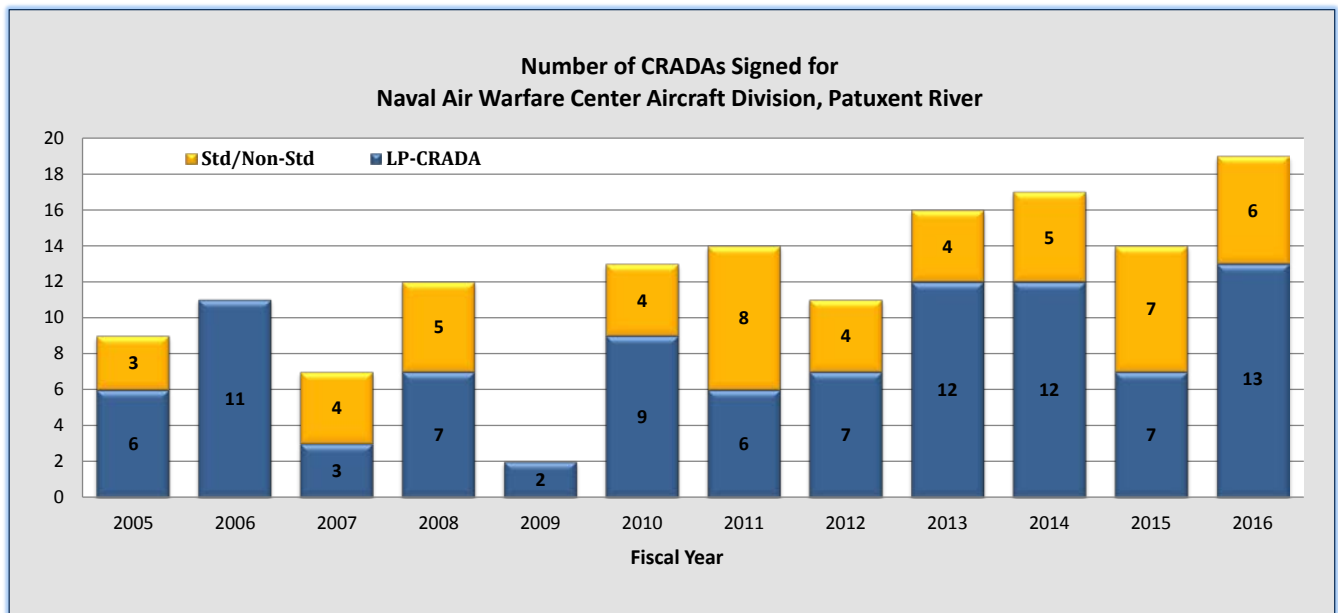
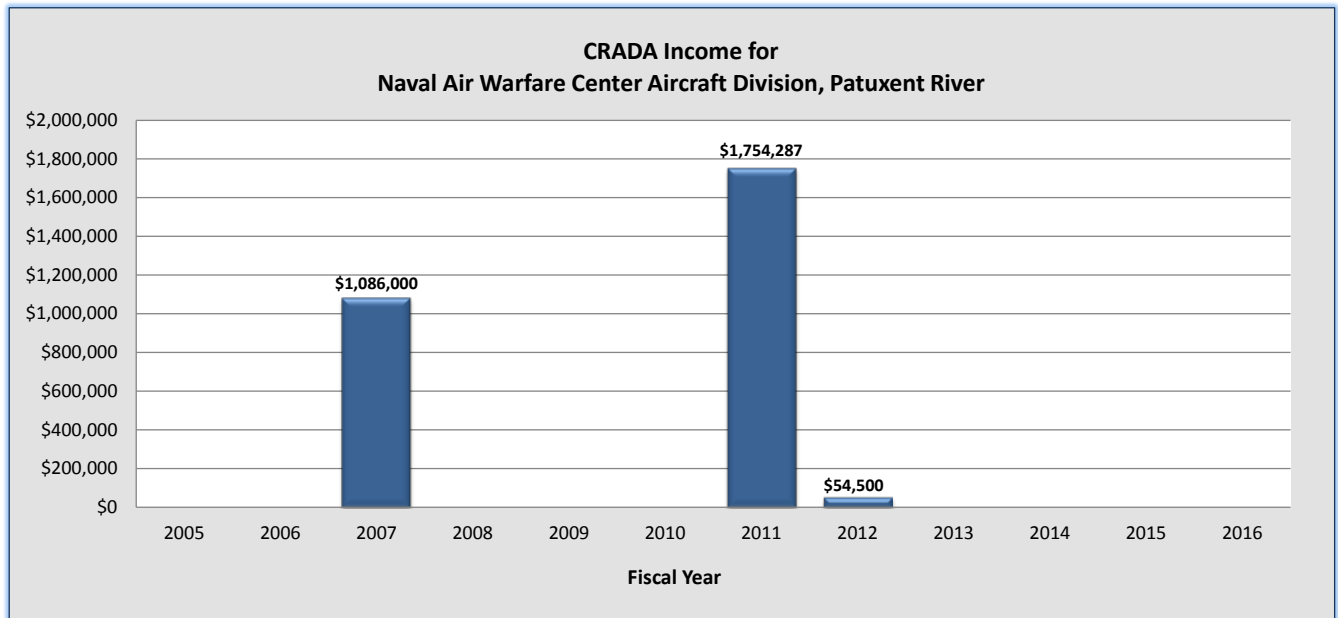
### CRADA History for Naval Air Warfare Center Aircraft Division, Patuxent River

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$2,074,910		52	10	62	62
<b>2005</b>	\$0		3	6	9	71
<b>2006</b>	\$0		-	11	11	82
<b>2007</b>	\$1,086,000		4	3	7	89
<b>2008</b>	\$0		5	7	12	101
<b>2009</b>	\$0		-	2	2	103
<b>2010</b>	\$0		4	9	13	116
<b>2011</b>	\$1,754,287	\$75,000	8	6	14	130
<b>2012</b>	\$54,500		4	7	11	141
<b>2013</b>	\$0		4	12	16	157
<b>2014</b>	\$0		5	12	17	174
<b>2015</b>	\$0		7	7	14	188
<b>2016</b>	\$0		6	13	19	207

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\*\* TA-CRADAs are included in the LP-CRADA column.

## Appendix B FY16 DON CRADA Income and History by Laboratory



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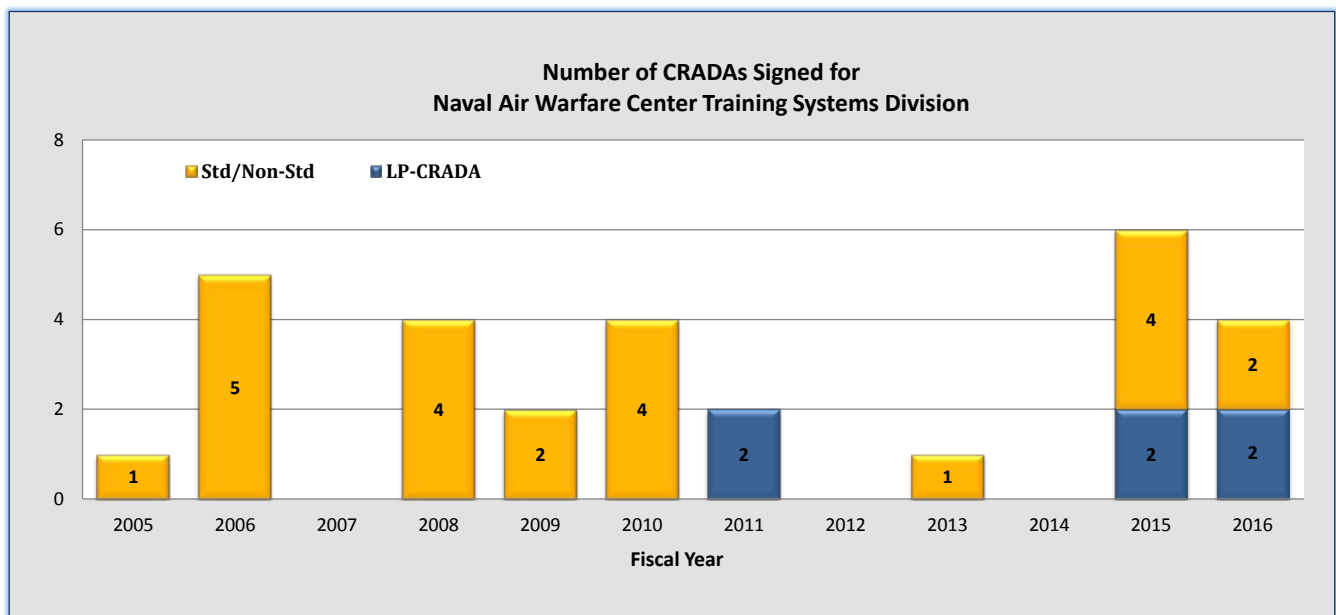
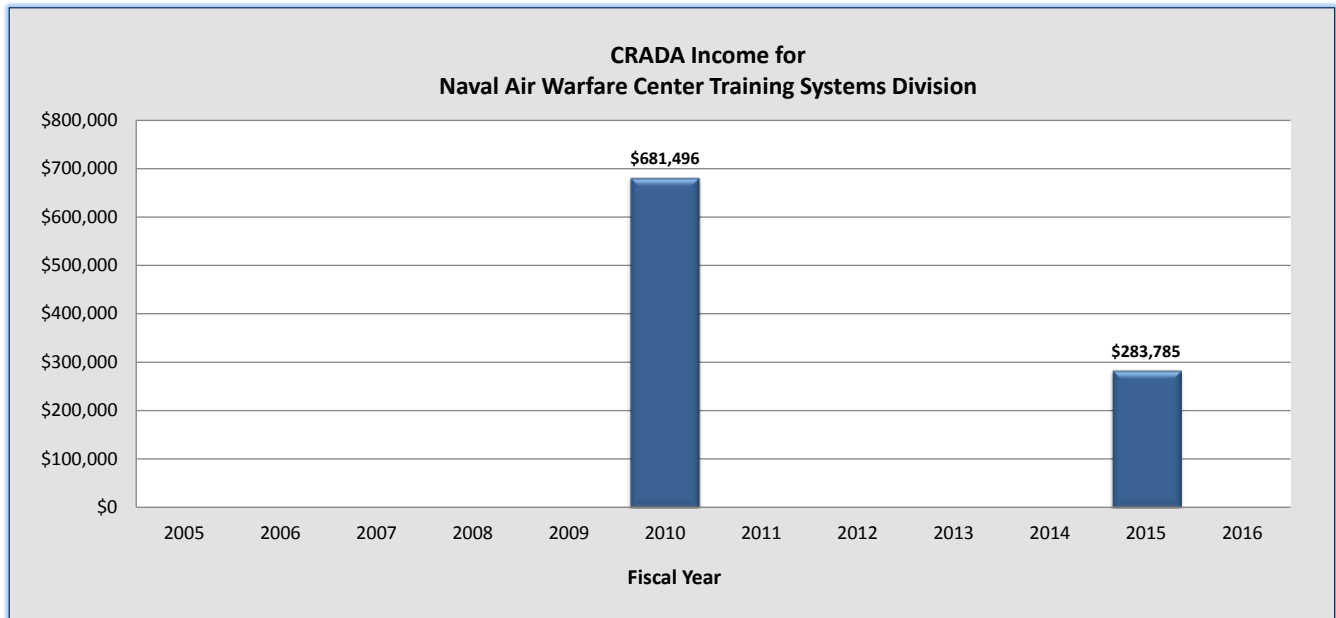
### CRADA History for Naval Air Warfare Center Training Systems Division

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$13,000		29	-	29	29
<b>2005</b>	\$0		1	-	1	30
<b>2006</b>	\$0		5	-	5	35
<b>2007</b>	\$0		-	-	-	35
<b>2008</b>	\$0		4	-	4	39
<b>2009</b>	\$0		2	-	2	41
<b>2010</b>	\$681,496		4	-	4	45
<b>2011</b>	\$0		-	2	2	47
<b>2012</b>	\$0		-	-	-	47
<b>2013</b>	\$0		1	-	1	48
<b>2014</b>	\$0		-	-	-	48
<b>2015</b>	\$283,785		4	2	6	54
<b>2016</b>	\$0		2	2	4	58

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## Appendix B FY16 DON CRADA Income and History by Laboratory



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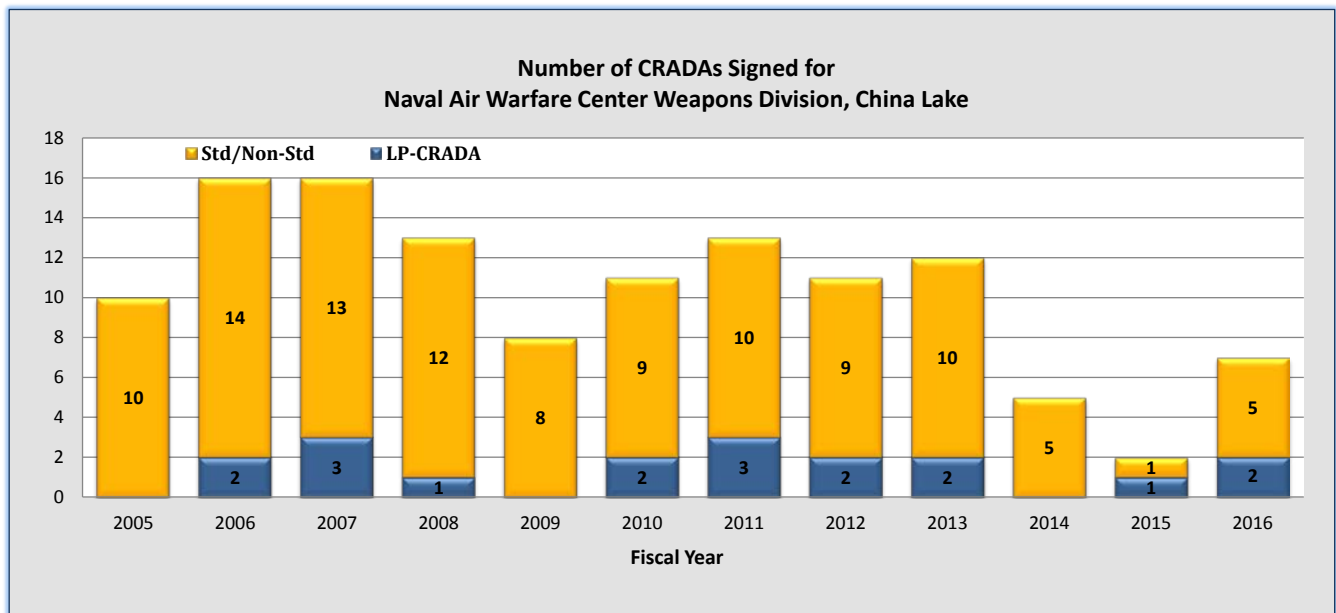
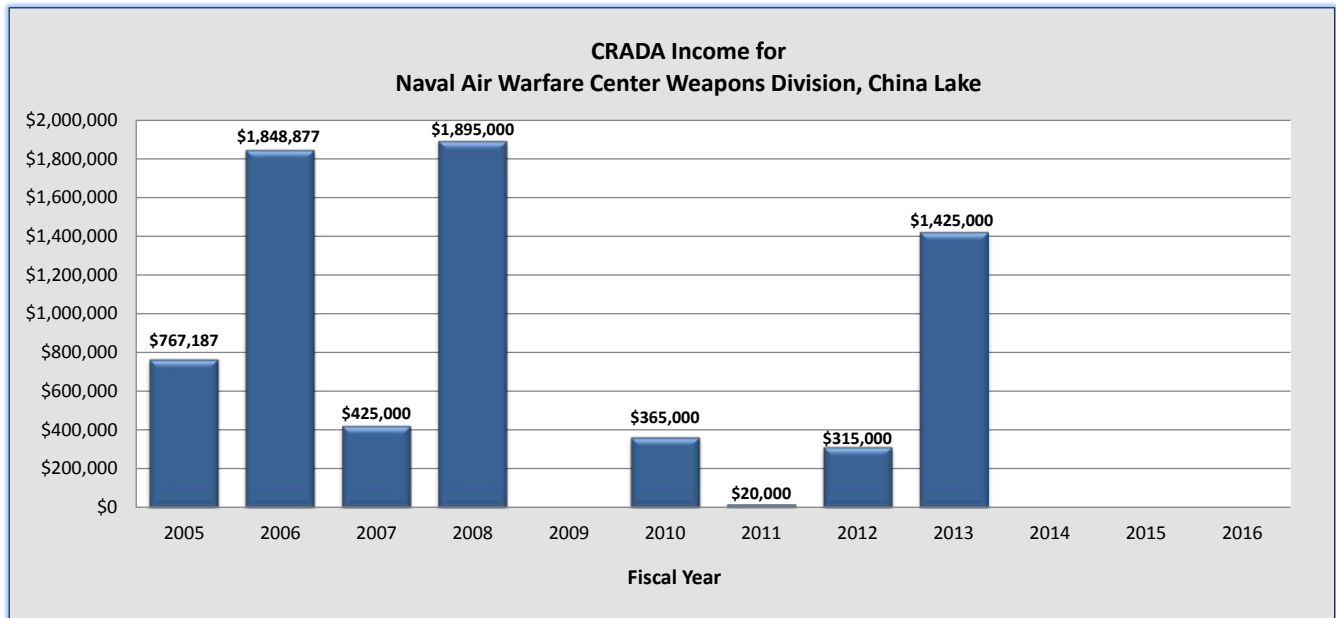
### CRADA History for Naval Air Warfare Center Weapons Division, China Lake

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$23,574,542		129	-	129	129
<b>2005</b>	\$767,187		10	-	10	139
<b>2006</b>	\$1,848,877		14	2	16	155
<b>2007</b>	\$425,000		13	3	16	171
<b>2008</b>	\$1,895,000		12	1	13	184
<b>2009</b>	\$0		8	-	8	192
<b>2010</b>	\$365,000		9	2	11	203
<b>2011</b>	\$20,000		10	3	13	216
<b>2012</b>	\$315,000		9	2	11	227
<b>2013</b>	\$1,425,000		10	2	12	239
<b>2014</b>	\$0		5	-	5	244
<b>2015</b>	\$0		1	1	2	246
<b>2016</b>	\$0		5	2	7	253

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

\*\* TA-CRADAs are included in the LP-CRADA column.

## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

### CRADA History for Naval Air Warfare Center Weapons Division, Point Mugu

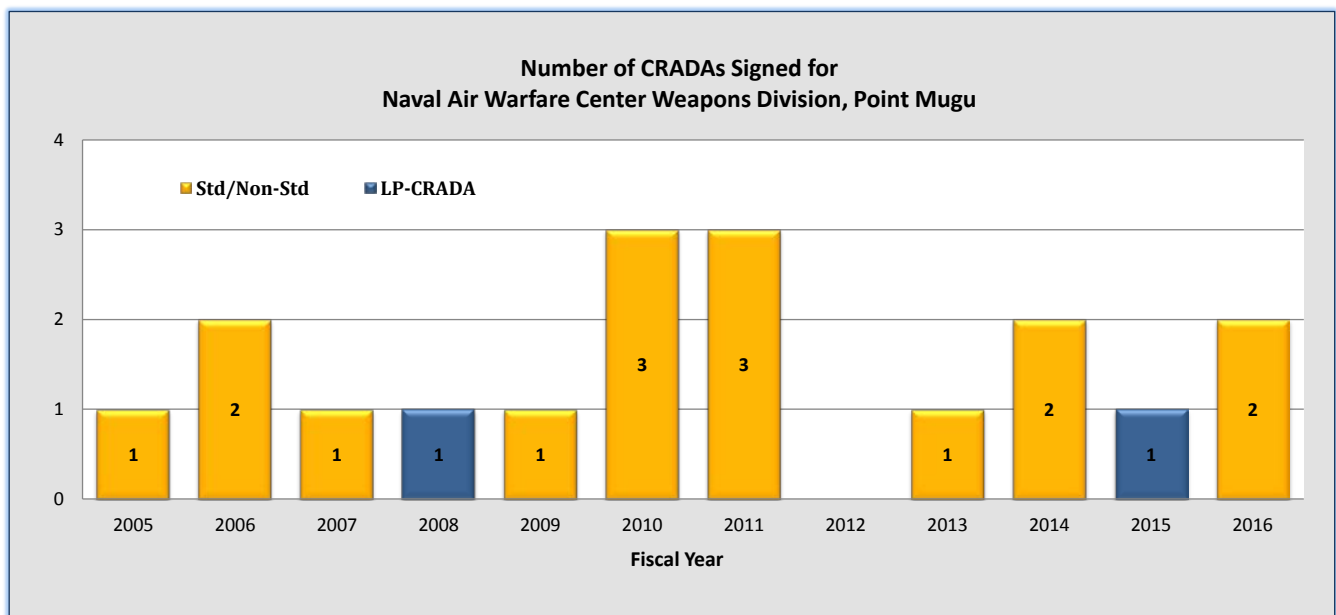
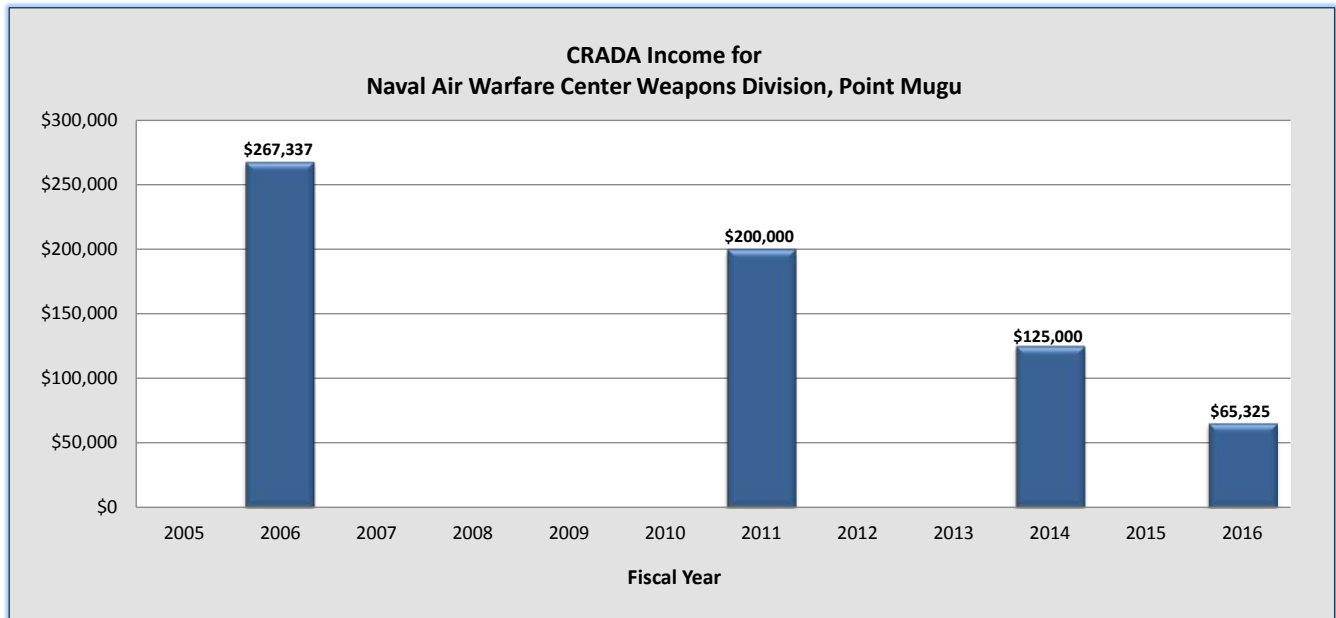
Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$2,378,000		33	3	36	36
<b>2005</b>	\$0		1	-	1	37
<b>2006</b>	\$267,337		2	-	2	39
<b>2007</b>	\$0		1	-	1	40
<b>2008</b>	\$0		-	1	1	41
<b>2009</b>	\$0		1	-	1	42
<b>2010</b>	\$0		3	-	3	45
<b>2011</b>	\$200,000		3	-	3	48
<b>2012</b>	\$0		-	-	-	48
<b>2013</b>	\$0		1	-	1	49
<b>2014</b>	\$125,000		2	-	2	51
<b>2015</b>	\$0		-	1	1	52
<b>2016</b>	\$65,325		2	-	2	54

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

\*\* TA-CRADAs are included in the LP-CRADA column.



## Appendix B FY16 DON CRADA Income and History by Laboratory



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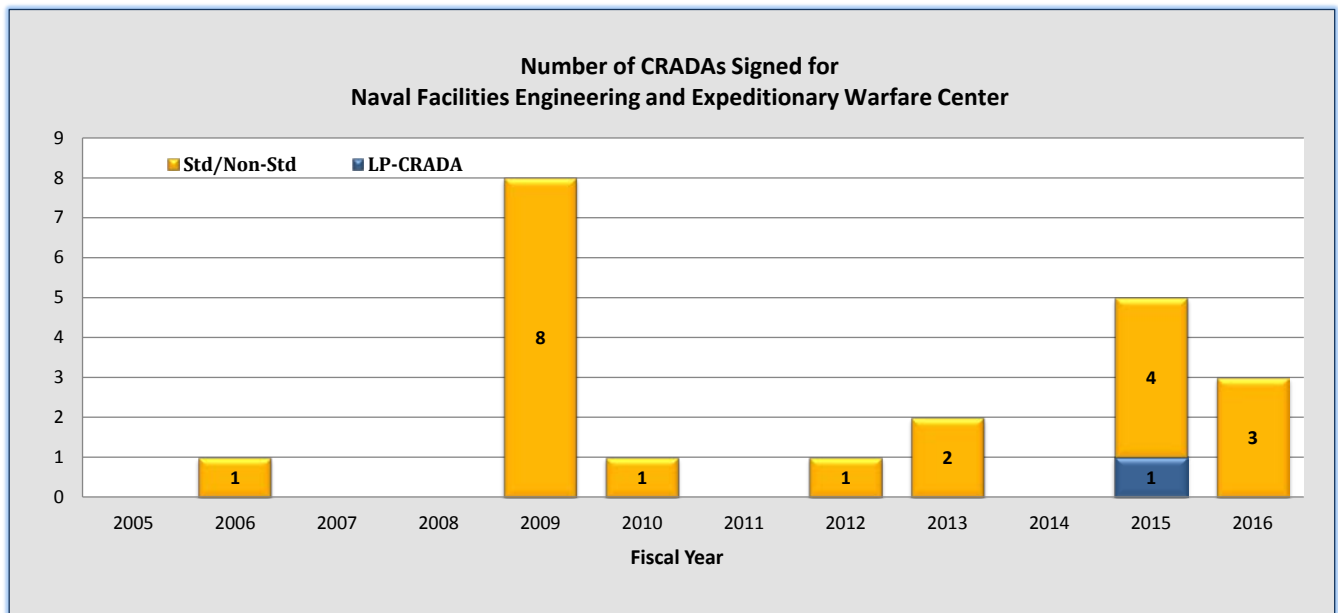
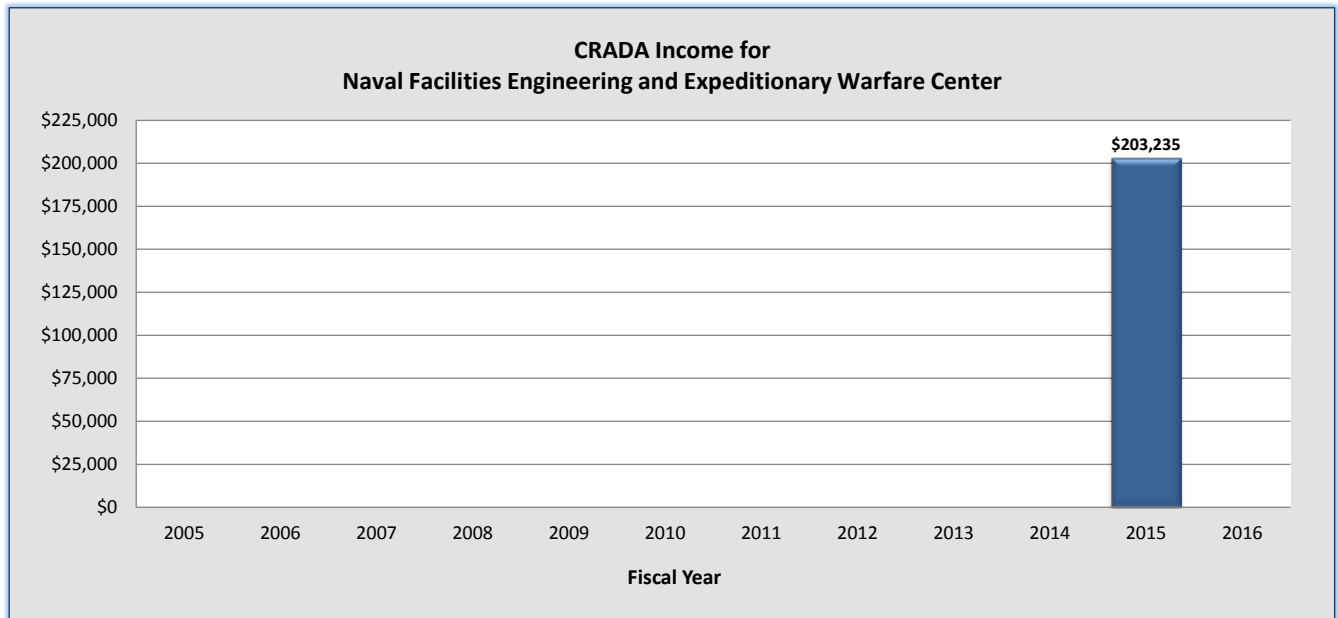
### CRADA History for Naval Facilities Engineering and Expeditionary Warfare Center

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$495,000		14	-	14	14
<b>2005</b>	\$0		-	-	-	14
<b>2006</b>	\$0		1	-	1	15
<b>2007</b>	\$0		-	-	-	15
<b>2008</b>	\$0		-	-	-	15
<b>2009</b>	\$0		8	-	8	23
<b>2010</b>	\$0		1	-	1	24
<b>2011</b>	\$0		-	-	-	24
<b>2012</b>	\$0		1	-	1	25
<b>2013</b>	\$0		2	-	2	27
<b>2014</b>	\$0		-	-	-	27
<b>2015</b>	\$203,235		4	1	5	32
<b>2016</b>	\$0		3	-	3	35

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

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## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

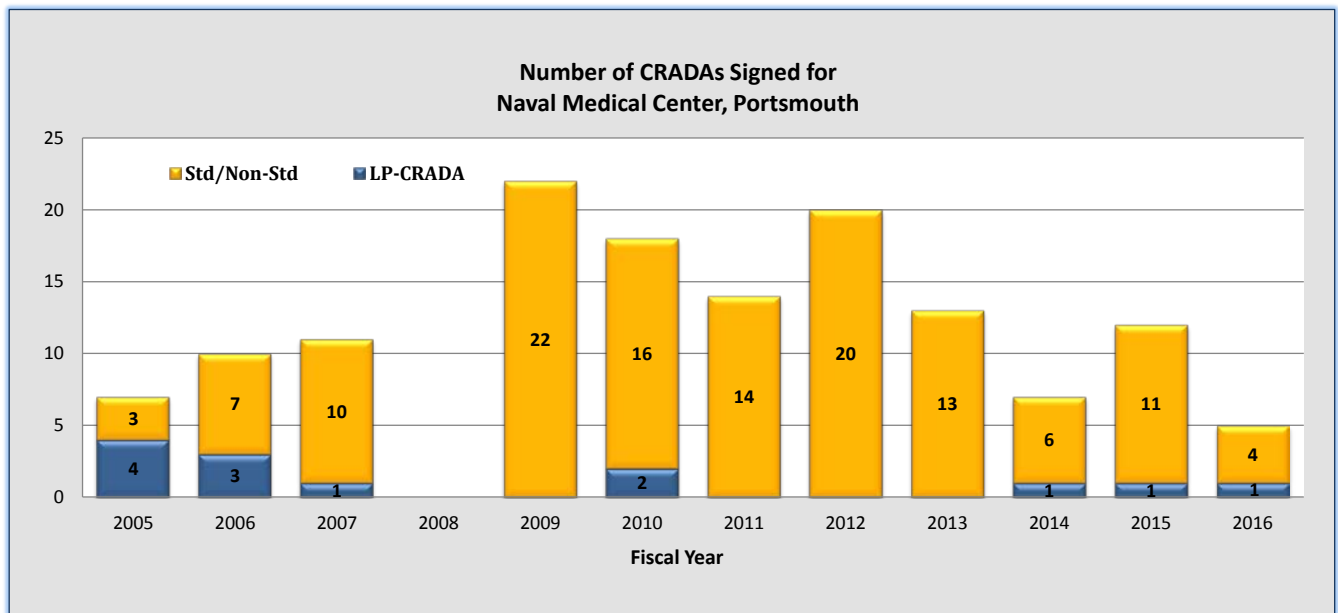
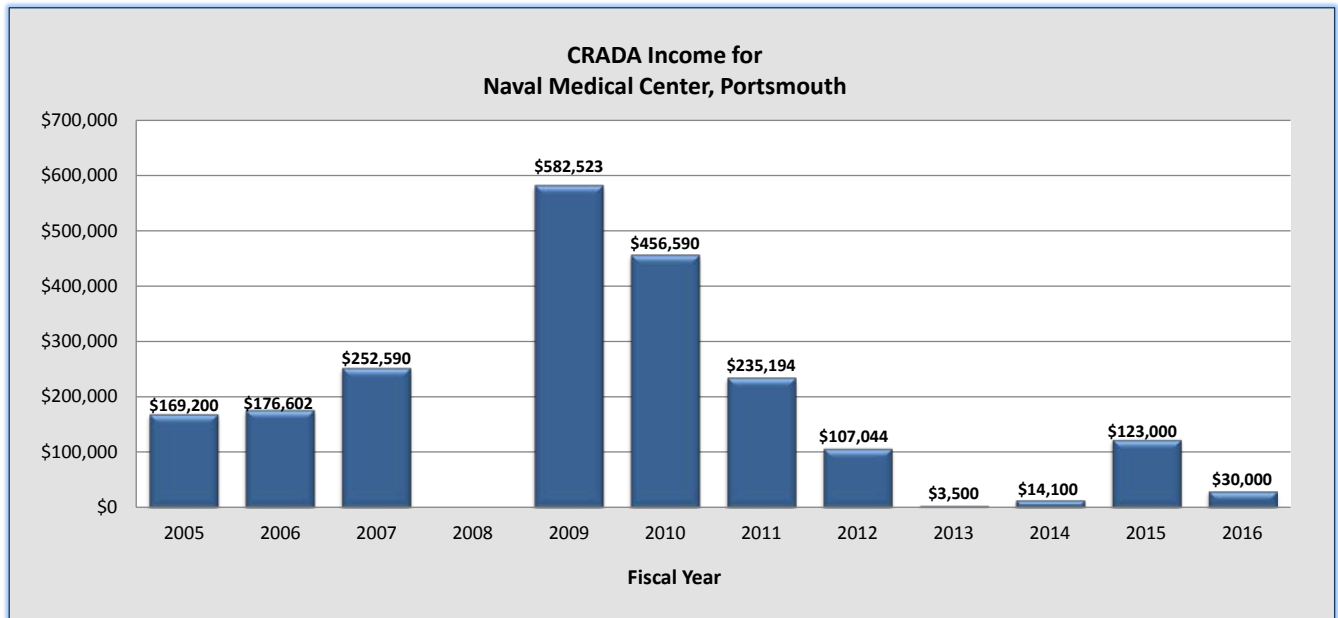
### CRADA History for Naval Medical Center, Portsmouth

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$118,333		19	2	21	21
<b>2005</b>	\$169,200		3	4	7	28
<b>2006</b>	\$176,602		7	3	10	38
<b>2007</b>	\$252,590		10	1	11	49
<b>2008</b>	\$0		-	-	-	49
<b>2009</b>	\$582,523		22	-	22	71
<b>2010</b>	\$456,590		16	2	18	89
<b>2011</b>	\$235,194		14	-	14	103
<b>2012</b>	\$107,044		20	-	20	123
<b>2013</b>	\$3,500		13	-	13	136
<b>2014</b>	\$14,100		6	1	7	143
<b>2015</b>	\$123,000		11	1	12	155
<b>2016</b>	\$30,000		4	1	5	160

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

\*\* TA-CRADAs are included in the LP-CRADA column.

## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

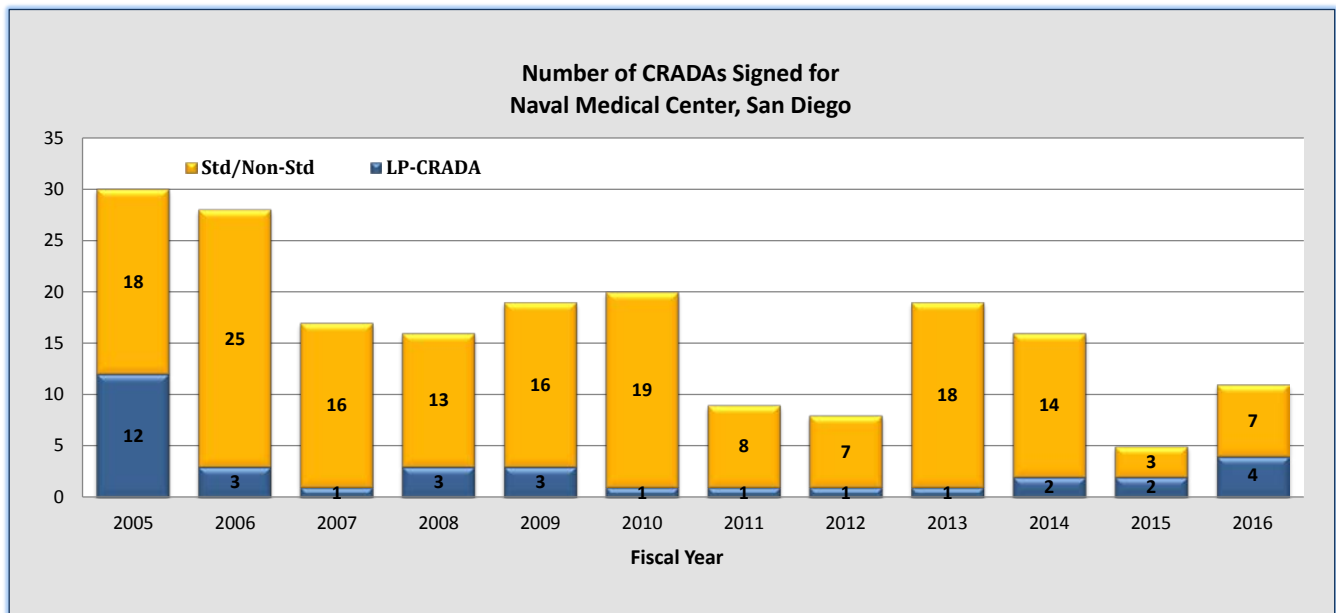
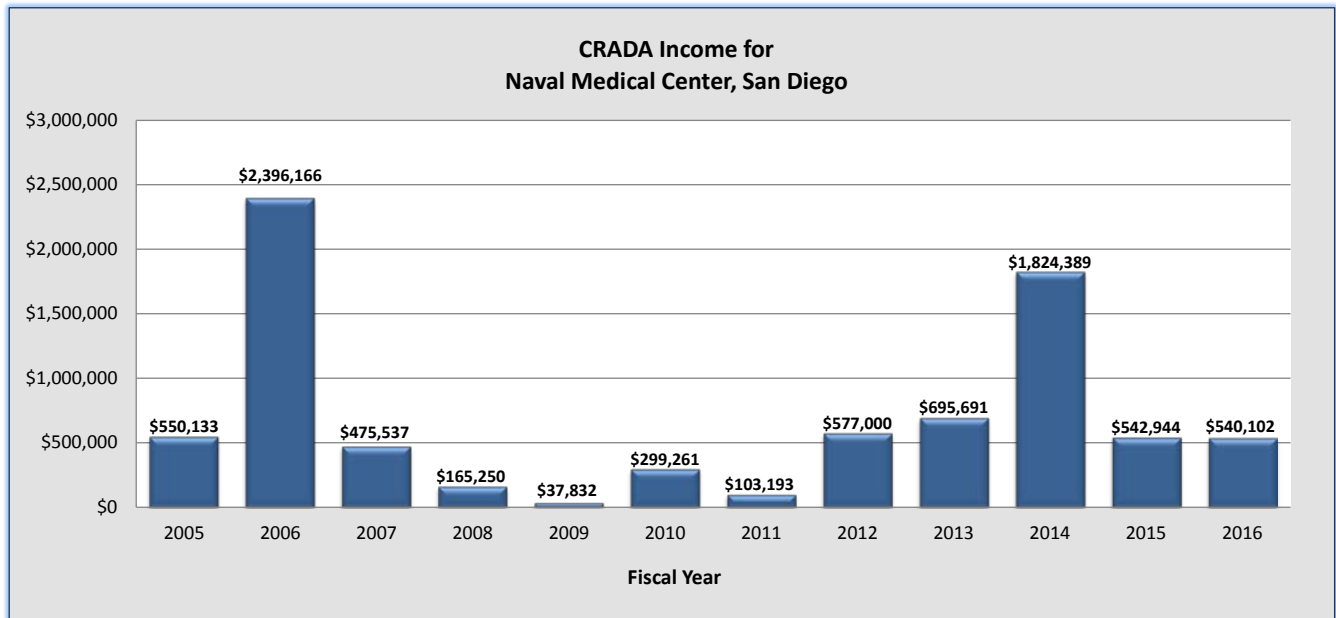
### CRADA History for Naval Medical Center, San Diego

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$2,905,728		73	17	90	90
<b>2005</b>	\$550,133		18	12	30	120
<b>2006</b>	\$2,396,166		25	3	28	148
<b>2007</b>	\$475,537		16	1	17	165
<b>2008</b>	\$165,250		13	3	16	181
<b>2009</b>	\$37,832		16	3	19	200
<b>2010</b>	\$299,261		19	1	20	220
<b>2011</b>	\$103,193		8	1	9	229
<b>2012</b>	\$577,000		7	1	8	237
<b>2013</b>	\$695,691		18	1	19	256
<b>2014</b>	\$1,824,389		14	2	16	272
<b>2015</b>	\$542,944		3	2	5	277
<b>2016</b>	\$540,102		7	4	11	288

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

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## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

### CRADA History for Naval Medical Research and Development Command

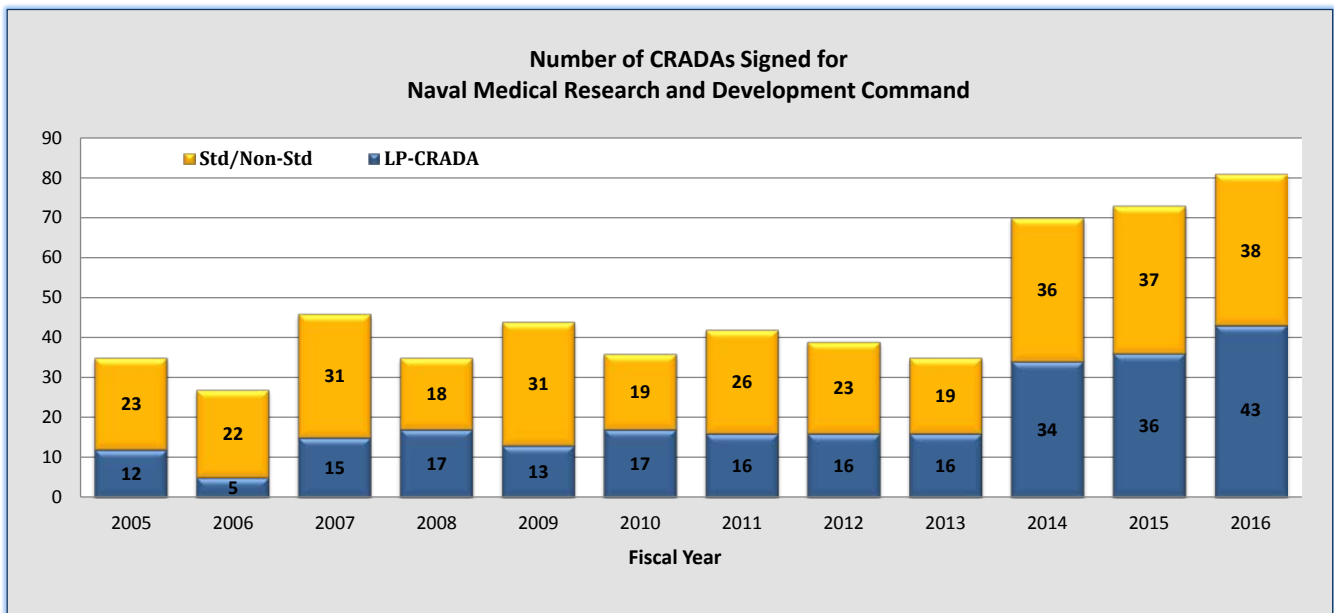
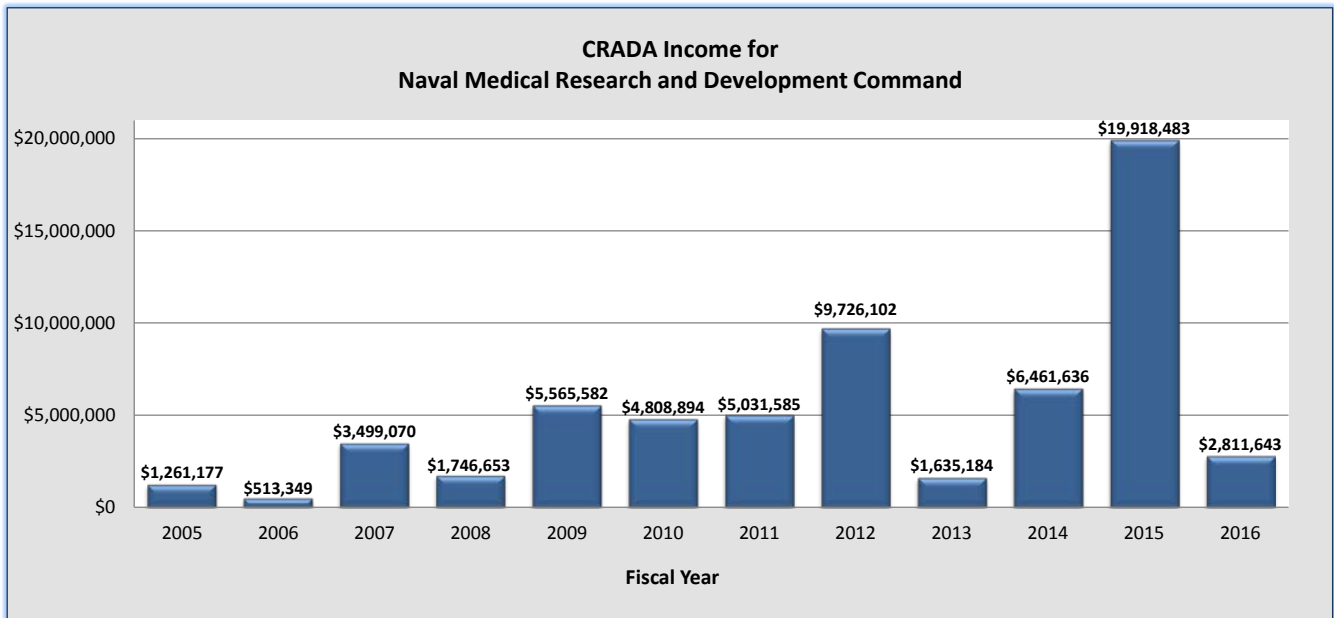
Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$10,034,529		215	179	394	394
<b>2005</b>	\$1,261,177		23	12	35	429
<b>2006</b>	\$513,349		22	5	27	456
<b>2007</b>	\$3,499,070		31	15	46	502
<b>2008</b>	\$1,746,653		18	17	35	537
<b>2009</b>	\$5,565,582		31	13	44	581
<b>2010</b>	\$4,808,894		19	17	36	617
<b>2011</b>	\$5,031,585		26	16	42	659
<b>2012</b>	\$9,726,102		23	16	39	698
<b>2013</b>	\$1,635,184	\$388,275	19	16	35	733
<b>2014</b>	\$6,461,636	\$333,600	36	34	70	803
<b>2015</b>	\$19,918,483	\$558,898	37	36	73	876
<b>2016</b>	\$2,811,643	\$20,000	38	43	81	957

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

\*\* TA-CRADAs are included in the LP-CRADA column.



## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

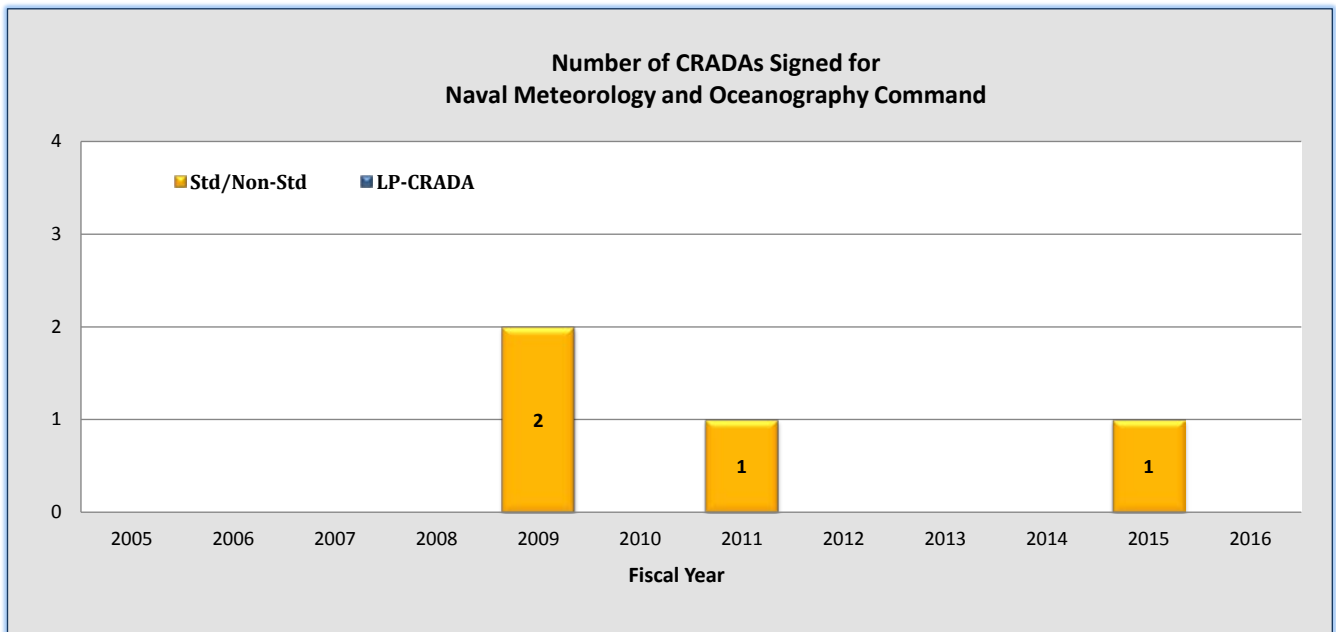
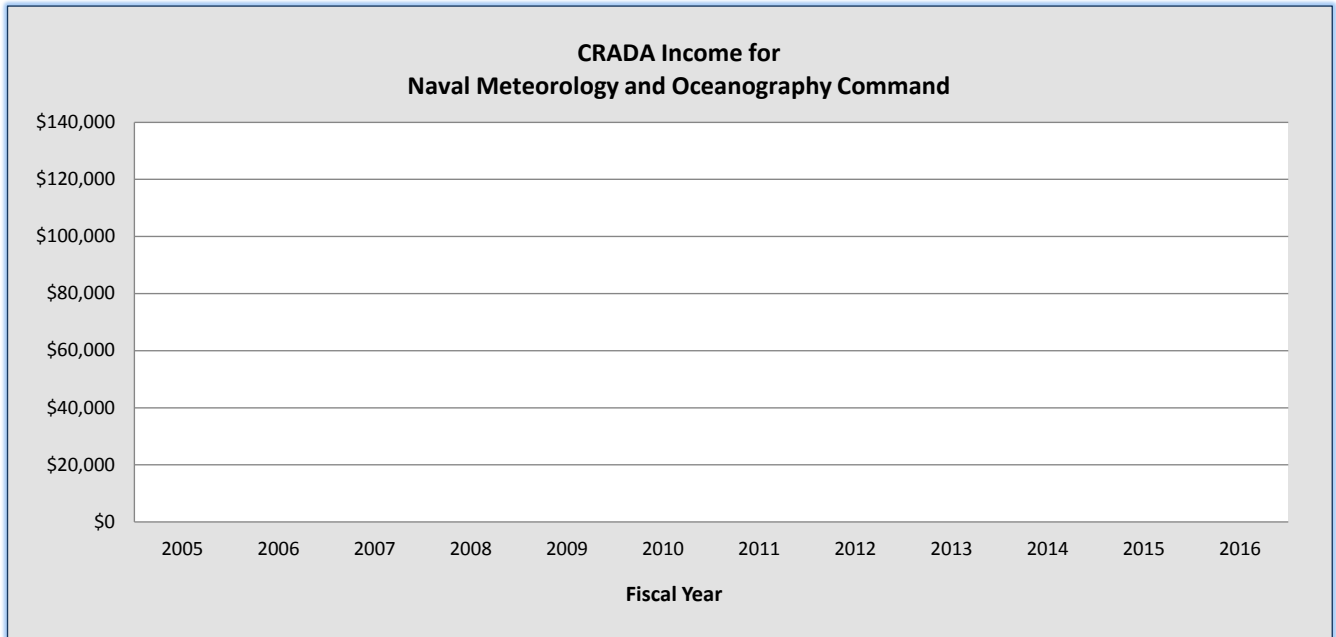
### CRADA History for Naval Meteorology and Oceanography Command

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$134,500		10	7	17	17
<b>2005</b>	\$0		-	-	-	17
<b>2006</b>	\$0		-	-	-	17
<b>2007</b>	\$0		-	-	-	17
<b>2008</b>	\$0		-	-	-	17
<b>2009</b>	\$0		2	-	2	19
<b>2010</b>	\$0		-	-	-	19
<b>2011</b>	\$0		1	-	1	20
<b>2012</b>	\$0		-	-	-	20
<b>2013</b>	\$0		-	-	-	20
<b>2014</b>	\$0		-	-	-	20
<b>2015</b>	\$0		1	-	1	21
<b>2016</b>	\$0		-	-	-	21

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

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## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

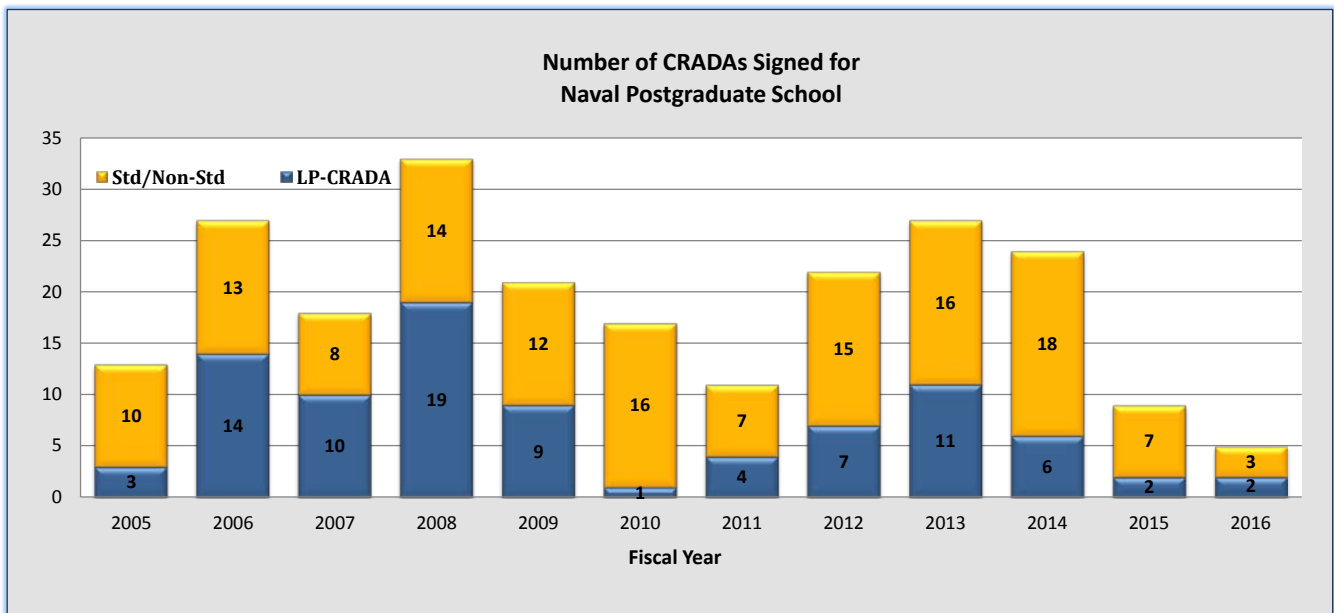
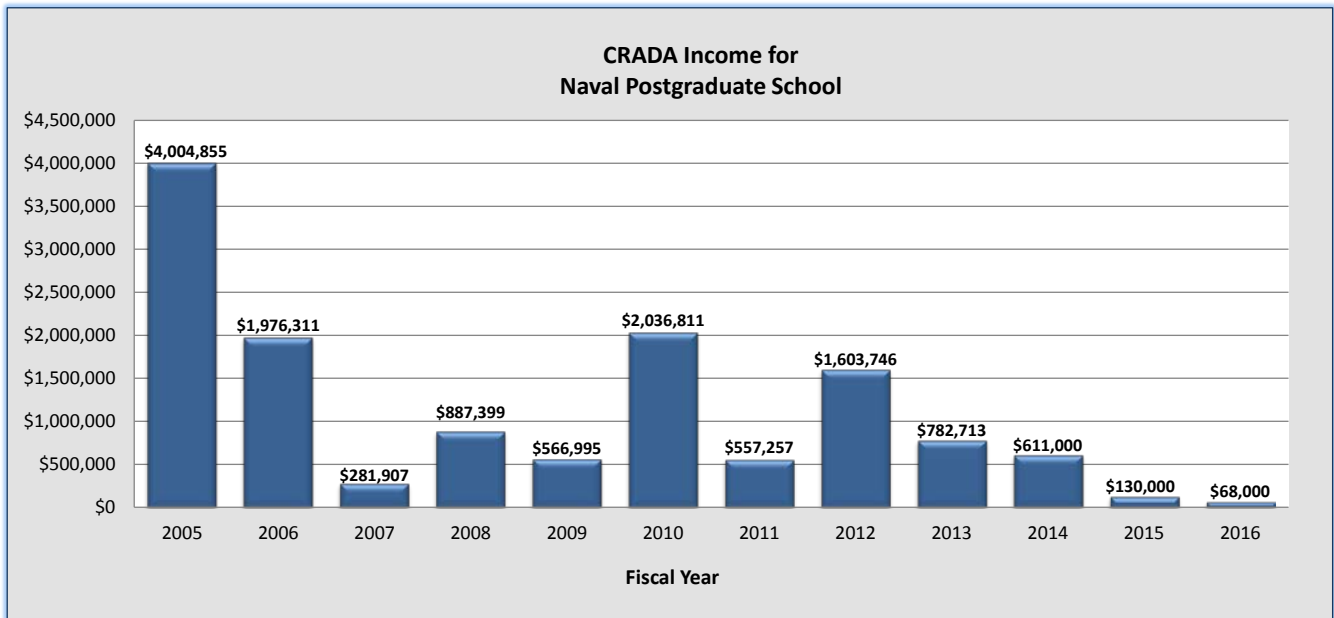
### CRADA History for Naval Postgraduate School

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$8,003,134		55	-	55	55
<b>2005</b>	\$4,004,855		10	3	13	68
<b>2006</b>	\$1,976,311		13	14	27	95
<b>2007</b>	\$281,907		8	10	18	113
<b>2008</b>	\$887,399		14	19	33	146
<b>2009</b>	\$566,995		12	9	21	167
<b>2010</b>	\$2,036,811		16	1	17	184
<b>2011</b>	\$557,257		7	4	11	195
<b>2012</b>	\$1,603,746		15	7	22	217
<b>2013</b>	\$782,713		16	11	27	244
<b>2014</b>	\$611,000		18	6	24	268
<b>2015</b>	\$130,000		7	2	9	277
<b>2016</b>	\$68,000		3	2	5	282

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

\*\* TA-CRADAs are included in the LP-CRADA column.

## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

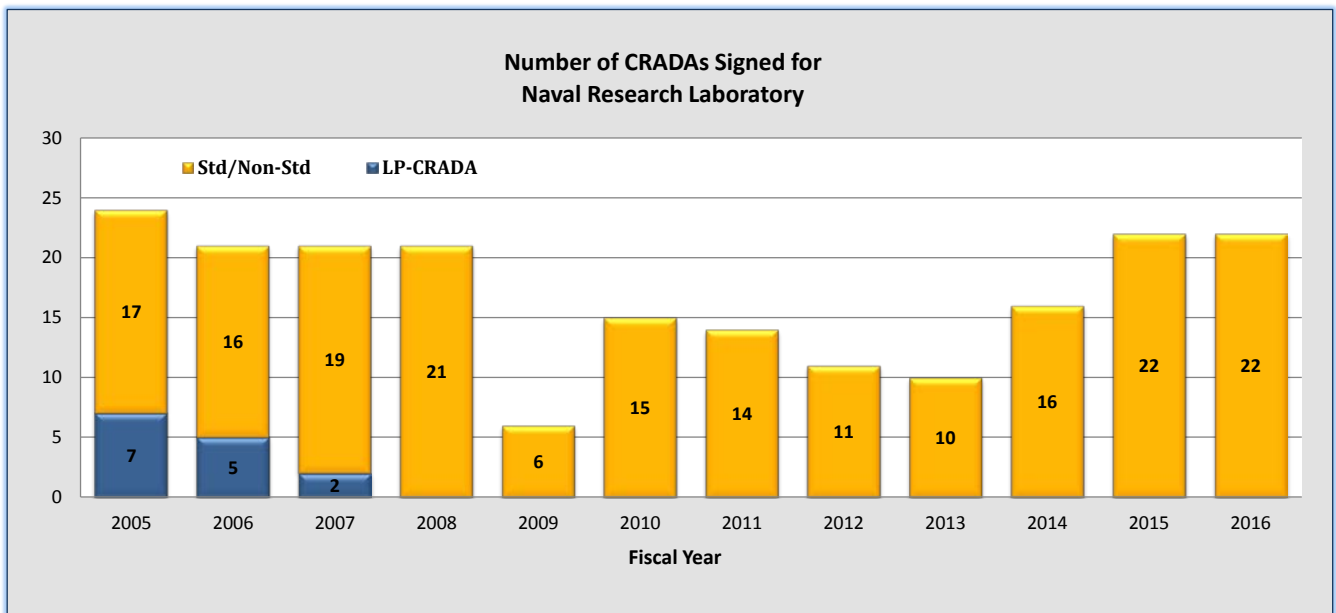
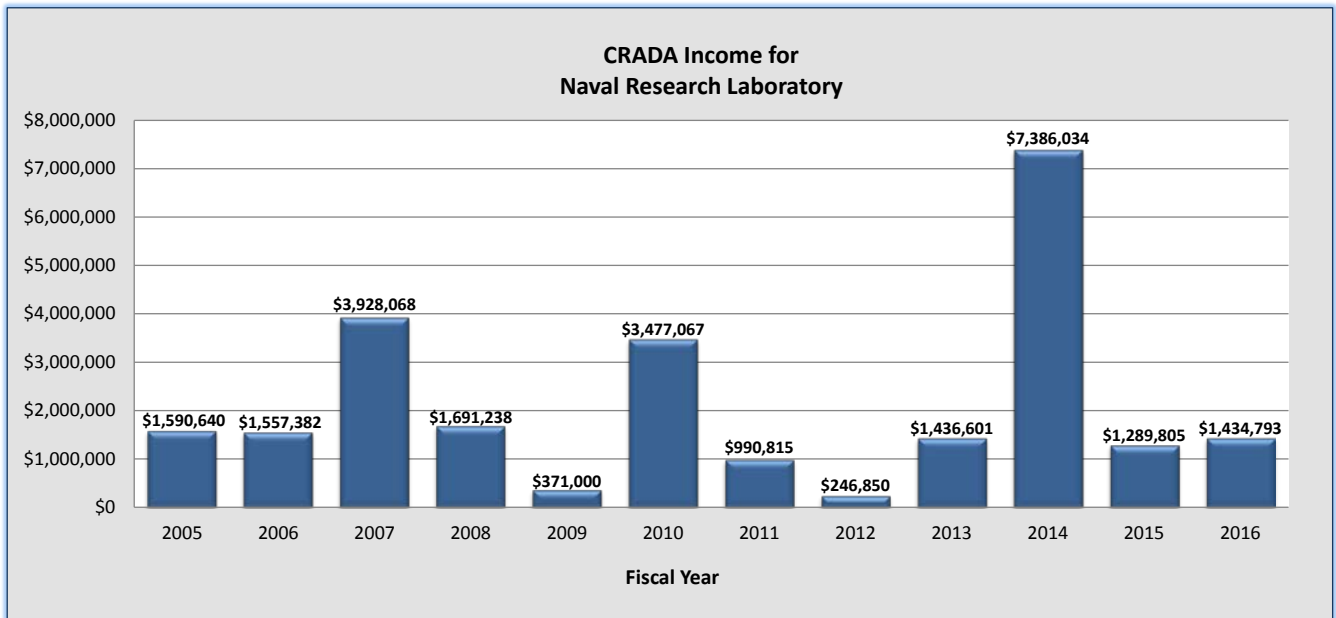
### CRADA History for Naval Research Laboratory

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$16,920,868		255	41	296	296
<b>2005</b>	\$1,590,640		17	7	24	320
<b>2006</b>	\$1,557,382		16	5	21	341
<b>2007</b>	\$3,928,068		19	2	21	362
<b>2008</b>	\$1,691,238		21	-	21	383
<b>2009</b>	\$371,000		6	-	6	389
<b>2010</b>	\$3,477,067		15	-	15	404
<b>2011</b>	\$990,815		14	-	14	418
<b>2012</b>	\$246,850		11	-	11	429
<b>2013</b>	\$1,436,601		10	-	10	439
<b>2014</b>	\$7,386,034	\$90,218	16	-	16	455
<b>2015</b>	\$1,289,805	\$50,000	22	-	22	477
<b>2016</b>	\$1,434,793		22	-	22	499

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## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

### CRADA History for Naval Surface Warfare Center, Carderock Division

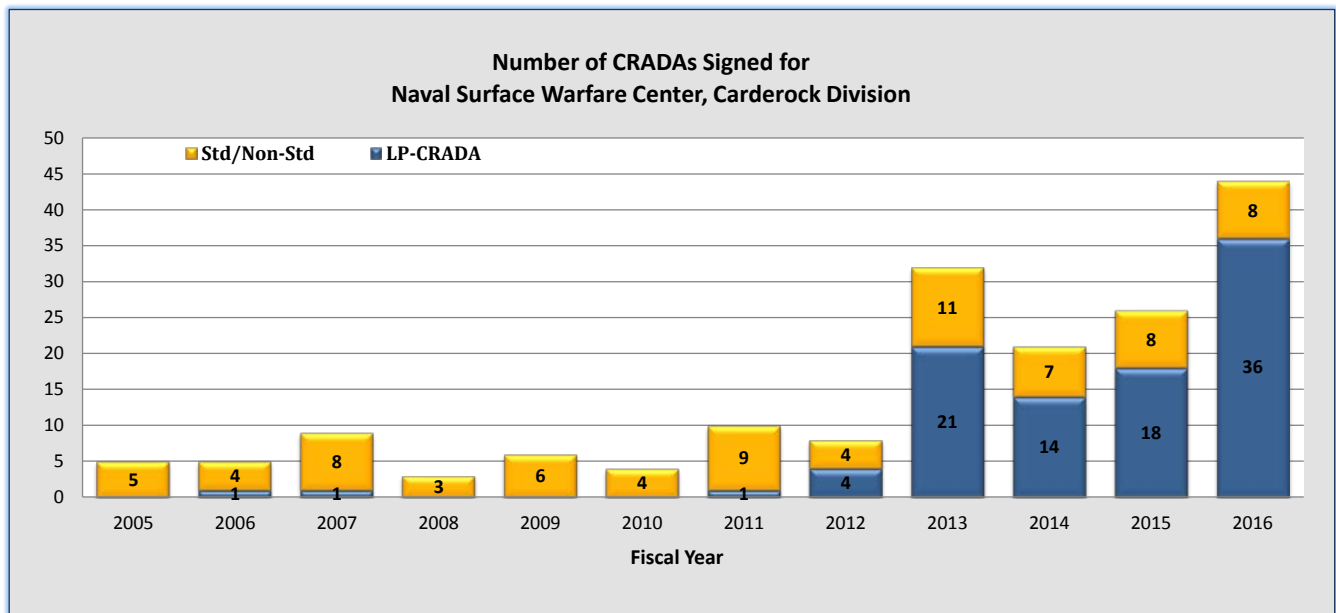
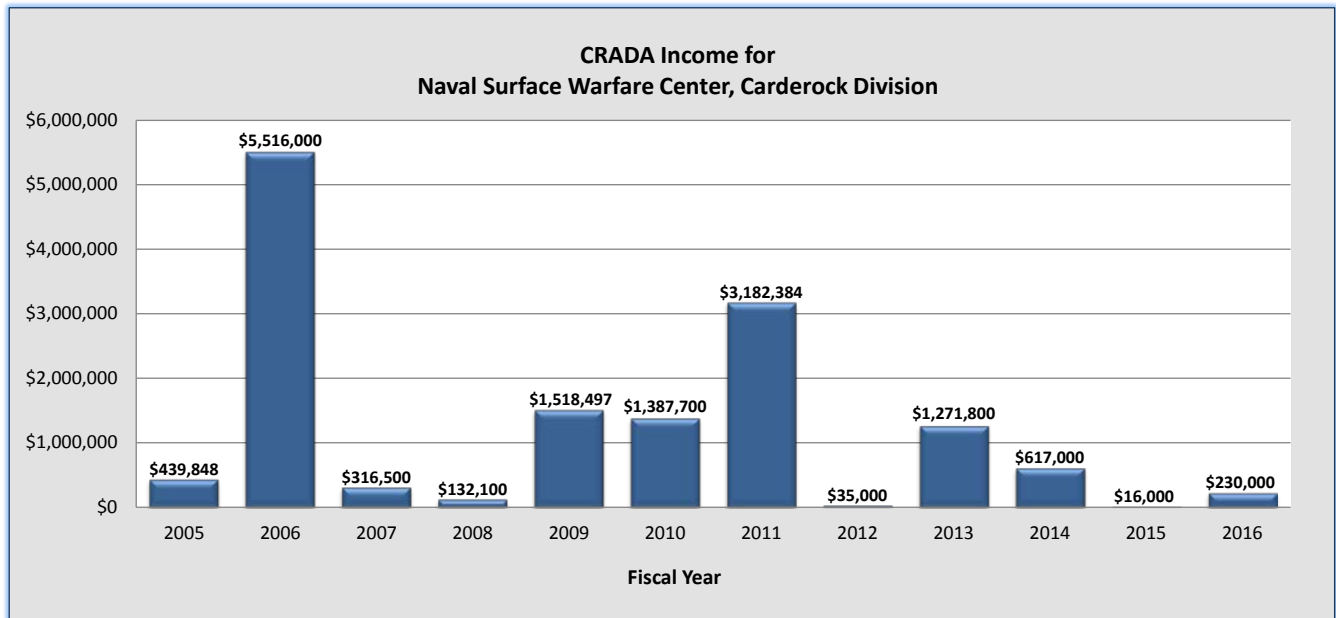
Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$2,375,625		43	16	59	59
<b>2005</b>	\$439,848		5	-	5	64
<b>2006</b>	\$5,516,000		4	1	5	69
<b>2007</b>	\$316,500		8	1	9	78
<b>2008</b>	\$132,100		3	-	3	81
<b>2009</b>	\$1,518,497		6	-	6	87
<b>2010</b>	\$1,387,700		4	-	4	91
<b>2011</b>	\$3,182,384		9	1	10	101
<b>2012</b>	\$35,000		4	4	8	109
<b>2013</b>	\$1,271,800		11	21	32	141
<b>2014</b>	\$617,000		7	14	21	162
<b>2015</b>	\$16,000		8	18	26	188
<b>2016</b>	\$230,000		8	36	44	232

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

\*\* TA-CRADAs are included in the LP-CRADA column.



## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

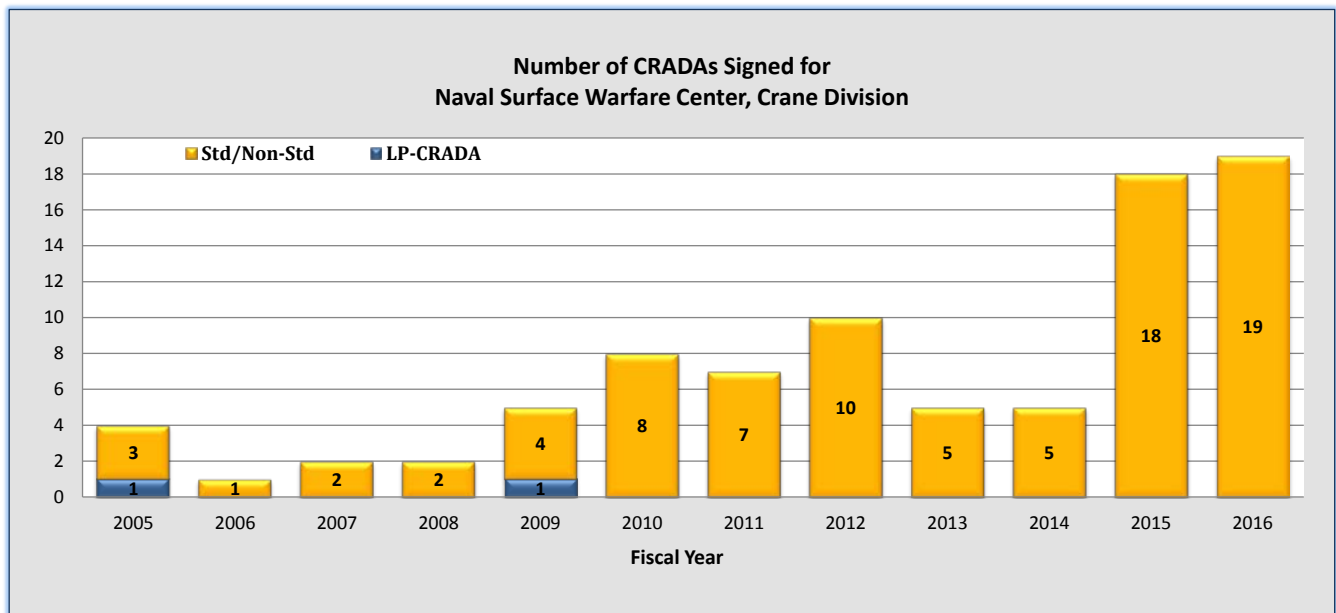
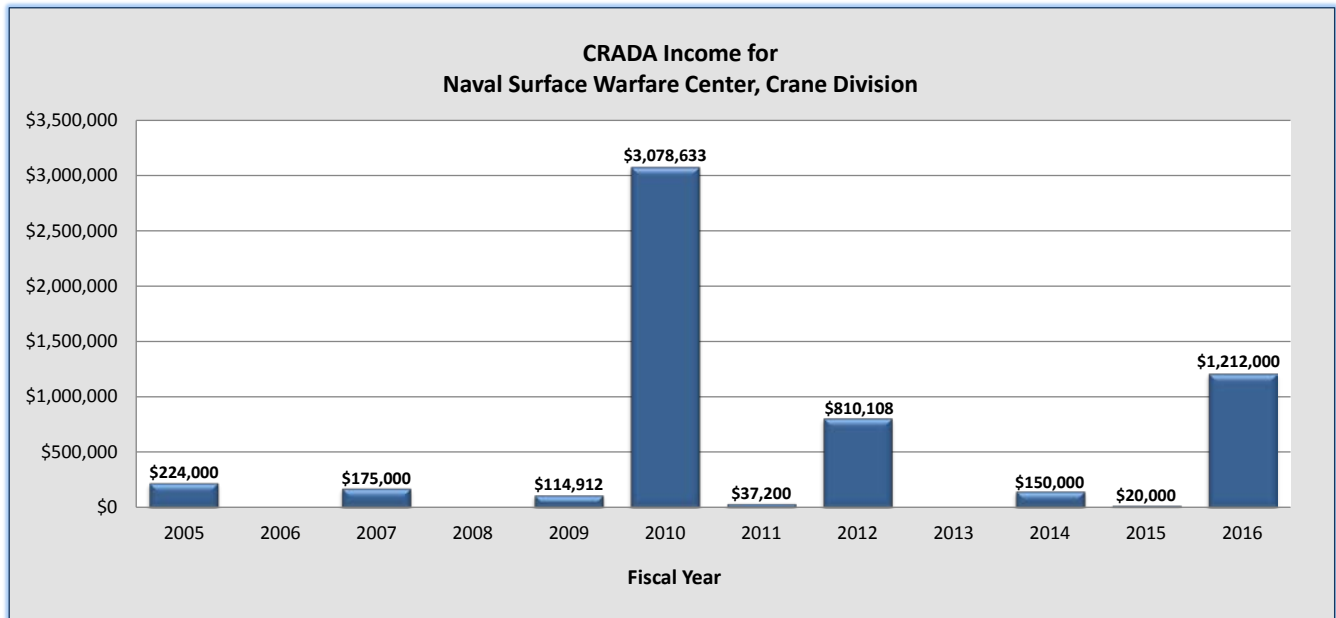
### CRADA History for Naval Surface Warfare Center, Crane Division

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$3,553,300		25	27	52	52
<b>2005</b>	\$224,000		3	1	4	56
<b>2006</b>	\$0		1	-	1	57
<b>2007</b>	\$175,000		2	-	2	59
<b>2008</b>	\$0		2	-	2	61
<b>2009</b>	\$114,912		4	1	5	66
<b>2010</b>	\$3,078,633		8	-	8	74
<b>2011</b>	\$37,200		7	-	7	81
<b>2012</b>	\$810,108		10	-	10	91
<b>2013</b>	\$0		5	-	5	96
<b>2014</b>	\$150,000		5	-	5	101
<b>2015</b>	\$20,000		18	-	18	119
<b>2016</b>	\$1,212,000		19	-	19	138

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

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## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

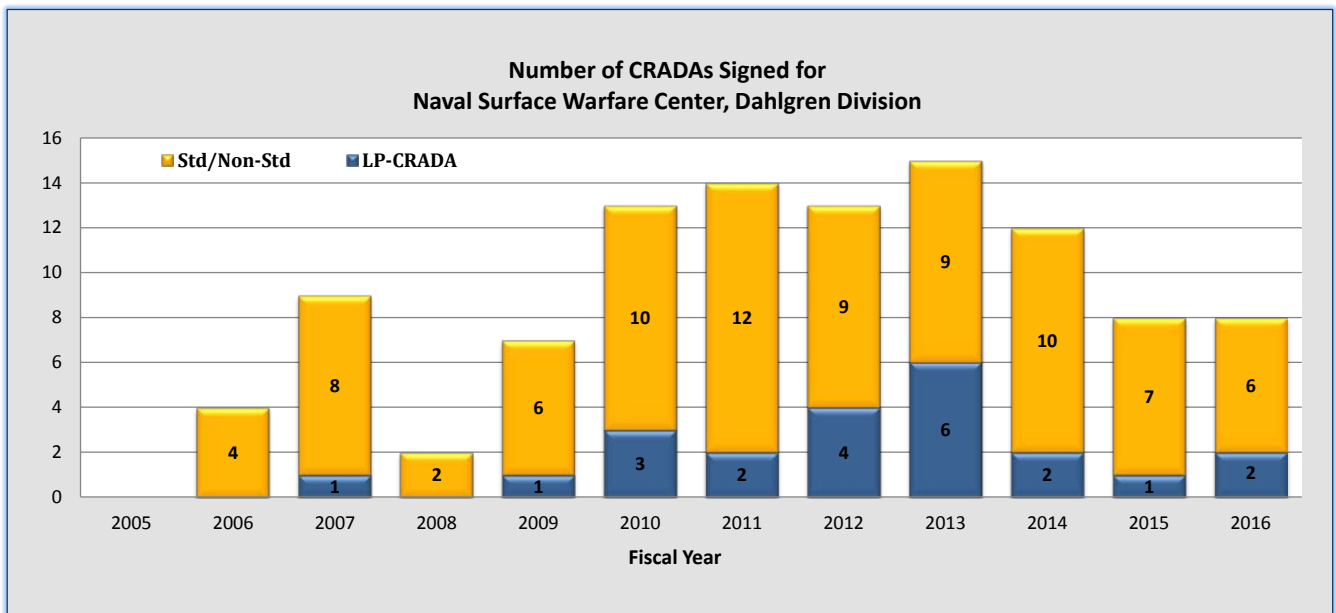
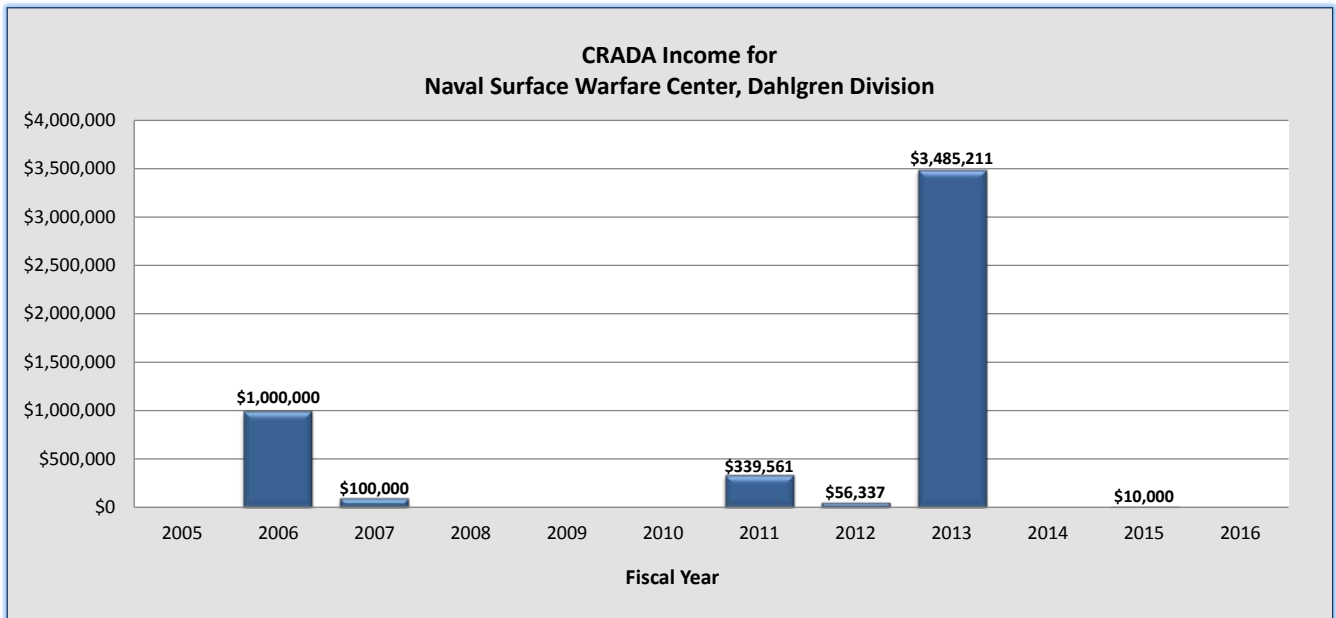
### CRADA History for Naval Surface Warfare Center, Dahlgren Division

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$1,485,477		65	1	66	66
<b>2005</b>	\$0		-	-	-	66
<b>2006</b>	\$1,000,000		4	-	4	70
<b>2007</b>	\$100,000		8	1	9	79
<b>2008</b>	\$0		2	-	2	81
<b>2009</b>	\$0		6	1	7	88
<b>2010</b>	\$0		10	3	13	101
<b>2011</b>	\$339,561		12	2	14	115
<b>2012</b>	\$56,337		9	4	13	128
<b>2013</b>	\$3,485,211		9	6	15	143
<b>2014</b>	\$0		10	2	12	155
<b>2015</b>	\$10,000		7	1	8	163
<b>2016</b>	\$0		6	2	8	171

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

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## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

### CRADA History for Naval Surface Warfare Center, Indian Head Explosive Ordnance Disposal Technology Division

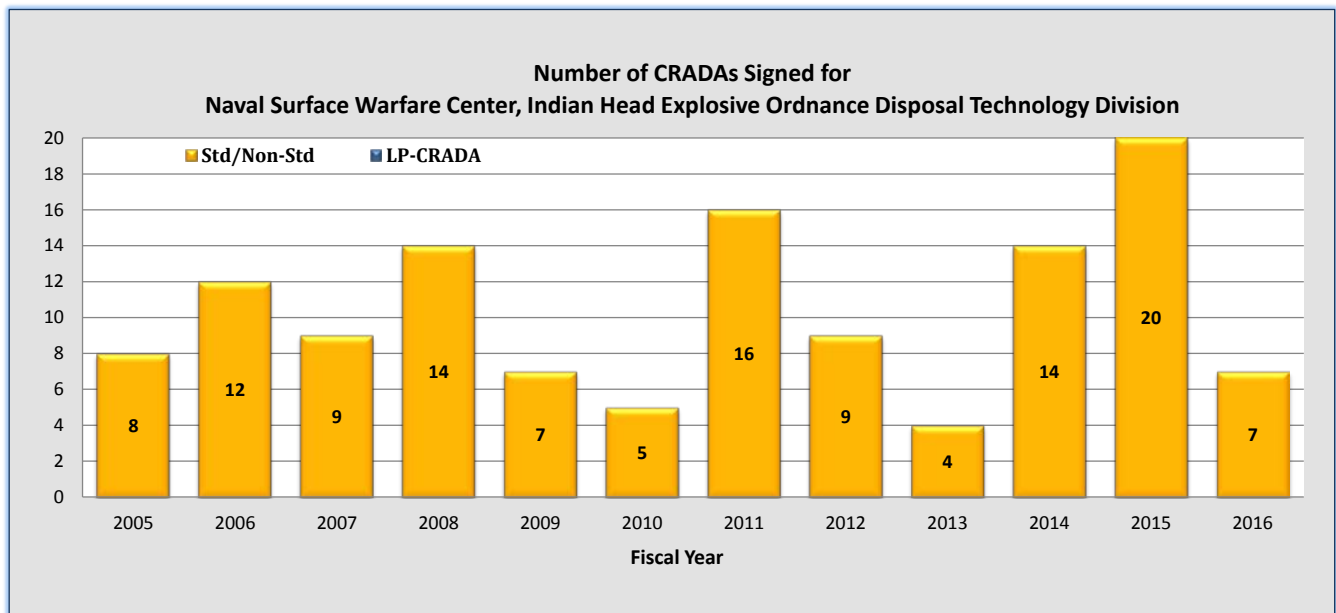
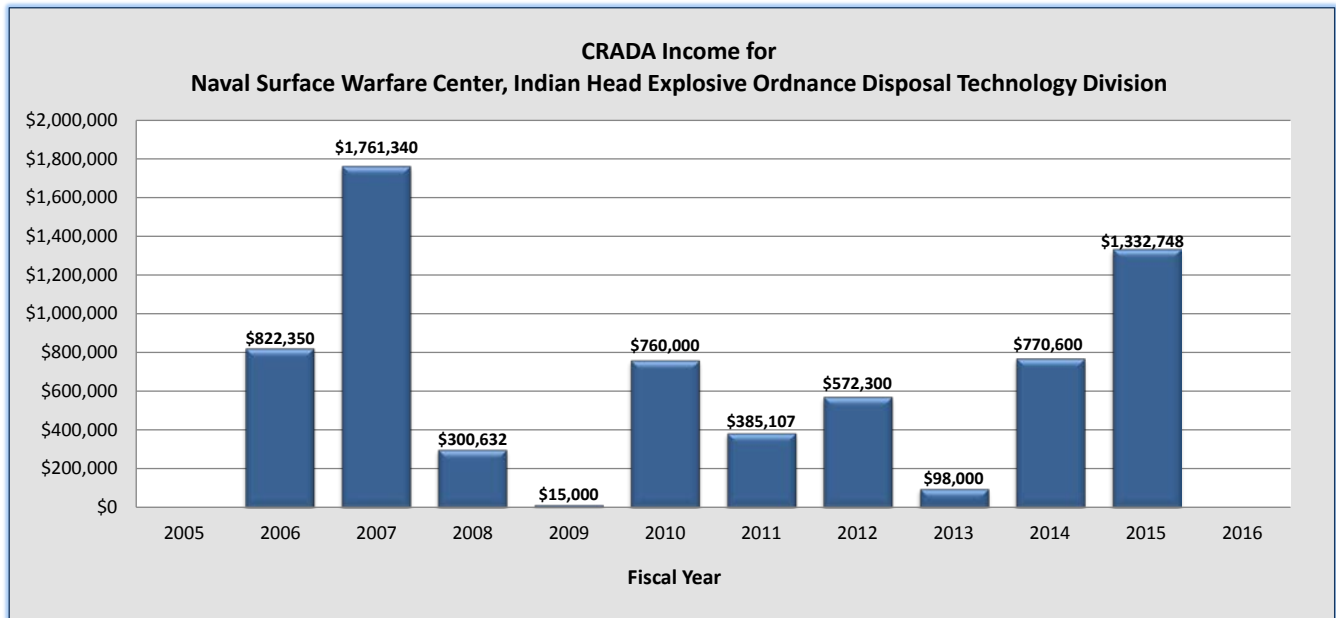
Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$1,261,300		73	4	77	77
<b>2005</b>	\$0		8	-	8	85
<b>2006</b>	\$822,350		12	-	12	97
<b>2007</b>	\$1,761,340		9	-	9	106
<b>2008</b>	\$300,632		14	-	14	120
<b>2009</b>	\$15,000		7	-	7	127
<b>2010</b>	\$760,000		5	-	5	132
<b>2011</b>	\$385,107		16	-	16	148
<b>2012</b>	\$572,300		9	-	9	157
<b>2013</b>	\$98,000		4	-	4	161
<b>2014</b>	\$770,600		14	-	14	175
<b>2015</b>	\$1,332,748		20	-	20	195
<b>2016</b>	\$0		7	-	7	202

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

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NOTE: As of February 28, 2013, the NSWC, Indian Head Division and the Naval Explosive Ordnance Disposal Technology Division were merged to form the NSWC, Indian Head Explosive Ordnance Disposal Technology Division (IHEODTECHDIV). The new Command, NSWC IHEODTECHDIV, retains the mission, functions, and technical capabilities of both organizations.

## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

### CRADA History for Naval Undersea Warfare Center, Division Keyport

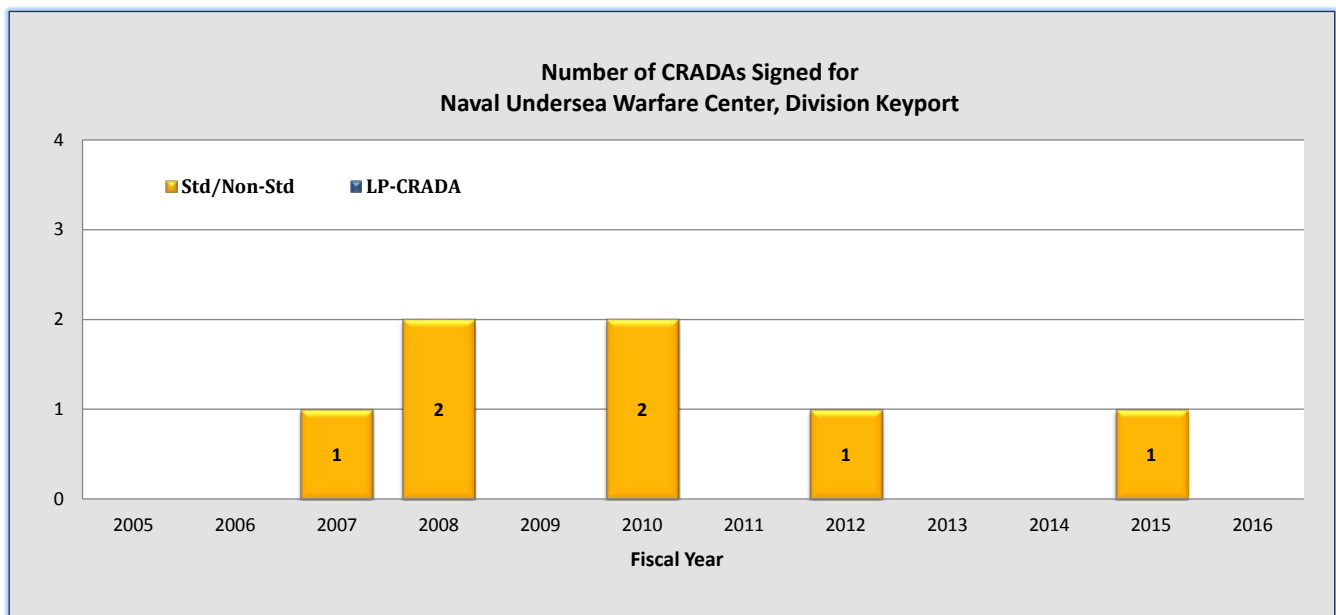
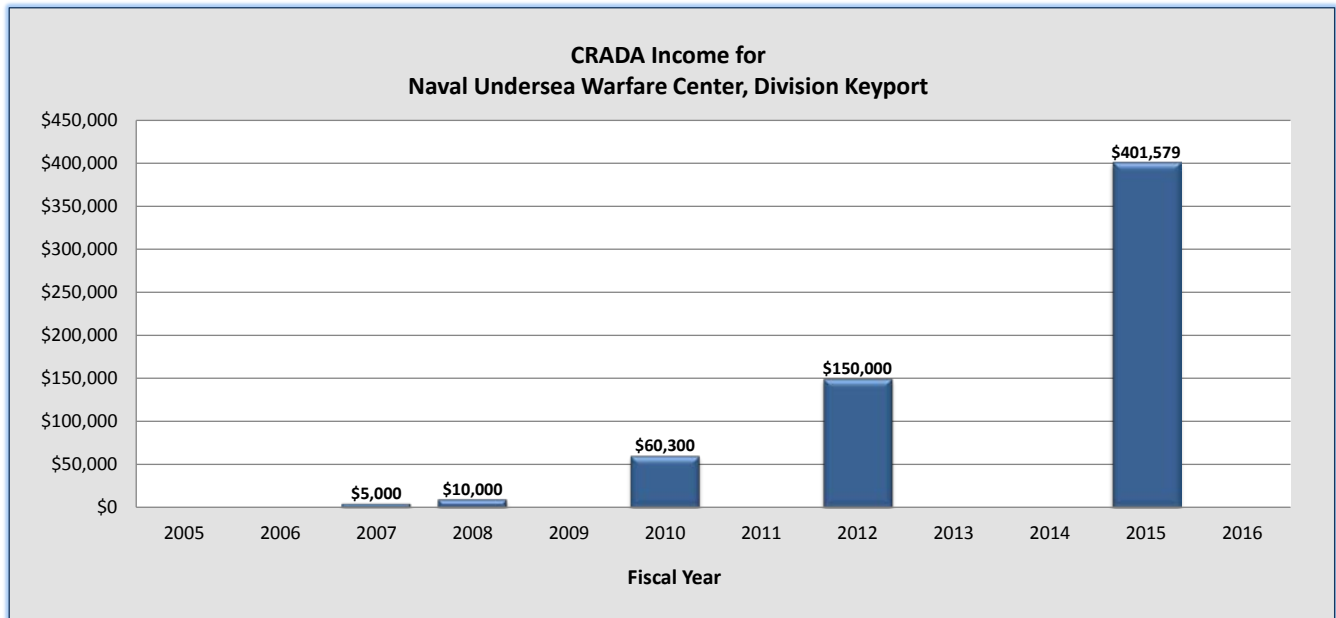
Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$0		5	1	6	6
<b>2005</b>	\$0		-	-	-	6
<b>2006</b>	\$0		-	-	-	6
<b>2007</b>	\$5,000		1	-	1	7
<b>2008</b>	\$10,000		2	-	2	9
<b>2009</b>	\$0		-	-	-	9
<b>2010</b>	\$60,300		2	-	2	11
<b>2011</b>	\$0		-	-	-	11
<b>2012</b>	\$150,000		1	-	1	12
<b>2013</b>	\$0		-	-	-	12
<b>2014</b>	\$0		-	-	-	12
<b>2015</b>	\$401,579		1	-	1	13
<b>2016</b>	\$0		-	-	-	13

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\*\* TA-CRADAs are included in the LP-CRADA column.



## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

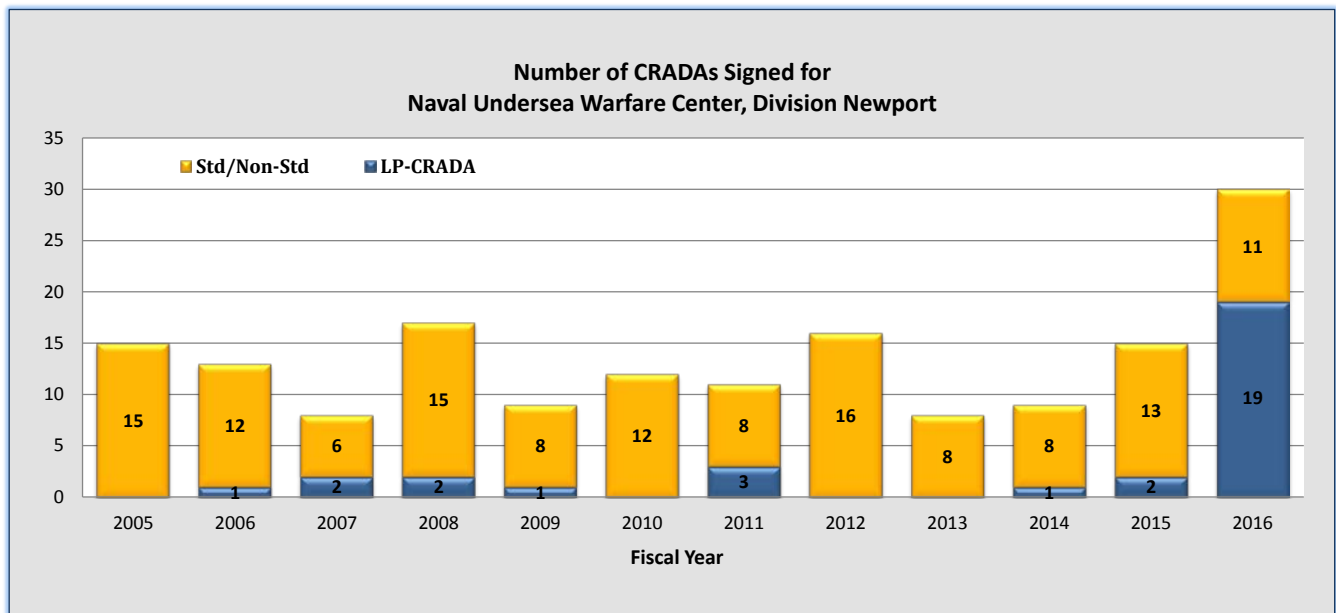
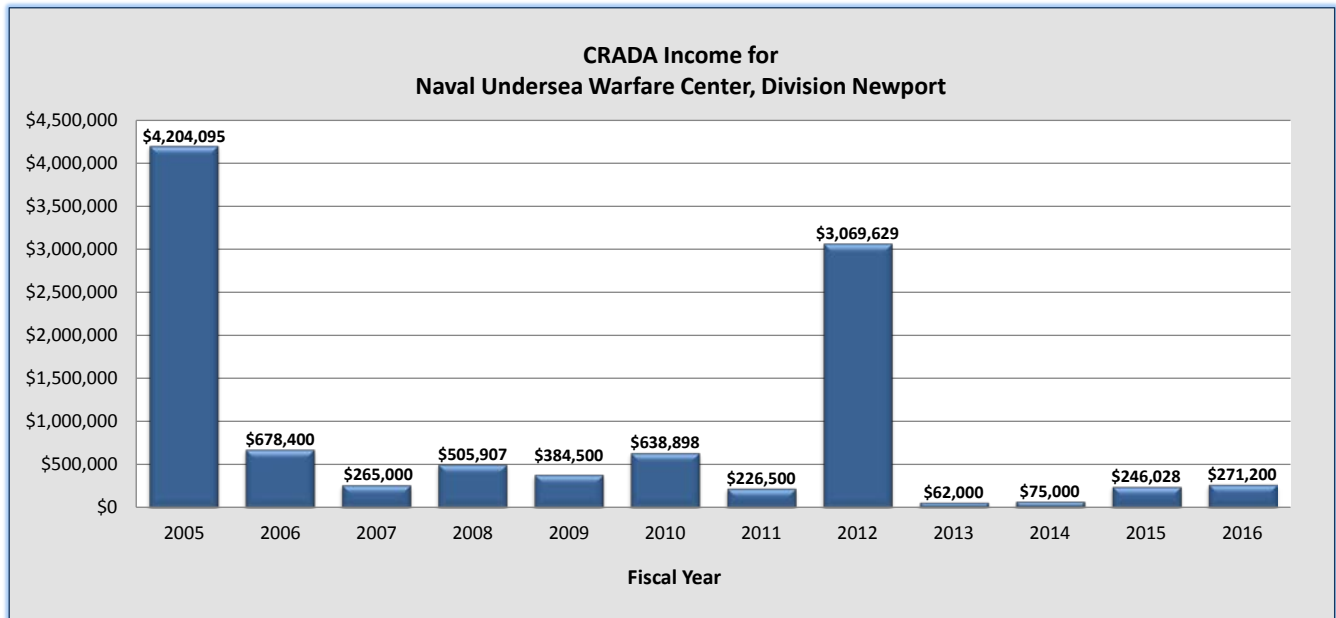
### CRADA History for Naval Undersea Warfare Center, Division Newport

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$8,994,038		135	8	143	143
<b>2005</b>	\$4,204,095		15	-	15	158
<b>2006</b>	\$678,400		12	1	13	171
<b>2007</b>	\$265,000		6	2	8	179
<b>2008</b>	\$505,907		15	2	17	196
<b>2009</b>	\$384,500		8	1	9	205
<b>2010</b>	\$638,898		12	-	12	217
<b>2011</b>	\$226,500		8	3	11	228
<b>2012</b>	\$3,069,629		16	-	16	244
<b>2013</b>	\$62,000		8	-	8	252
<b>2014</b>	\$75,000		8	1	9	261
<b>2015</b>	\$246,028		13	2	15	276
<b>2016</b>	\$271,200		11	19	30	306

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## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

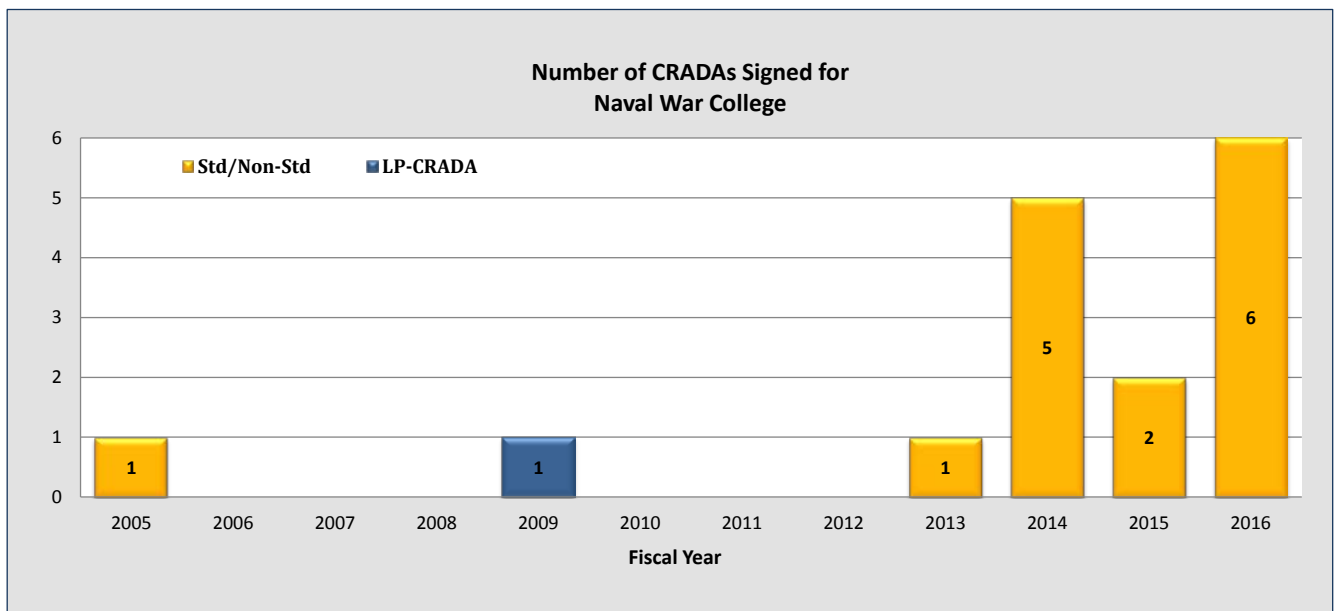
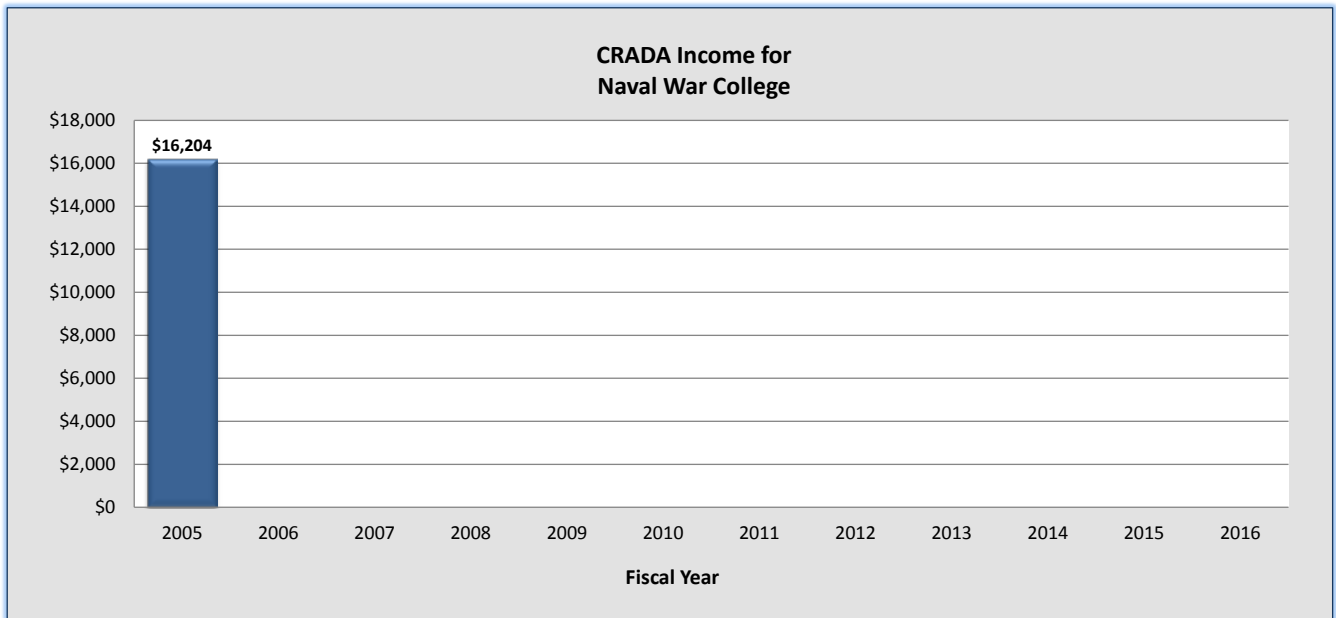
### CRADA History for Naval War College

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$110,730		5	-	5	5
<b>2005</b>	\$16,204		1	-	1	6
<b>2006</b>	\$0		-	-	-	6
<b>2007</b>	\$0		-	-	-	6
<b>2008</b>	\$0		-	-	-	6
<b>2009</b>	\$0		-	1	1	7
<b>2010</b>	\$0		-	-	-	7
<b>2011</b>	\$0		-	-	-	7
<b>2012</b>	\$0		-	-	-	7
<b>2013</b>	\$0		1	-	1	8
<b>2014</b>	\$0		5	-	5	13
<b>2015</b>	\$0		2	-	2	15
<b>2016</b>	\$0		6	-	6	21

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\*\* TA-CRADAs are included in the LP-CRADA column.

## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

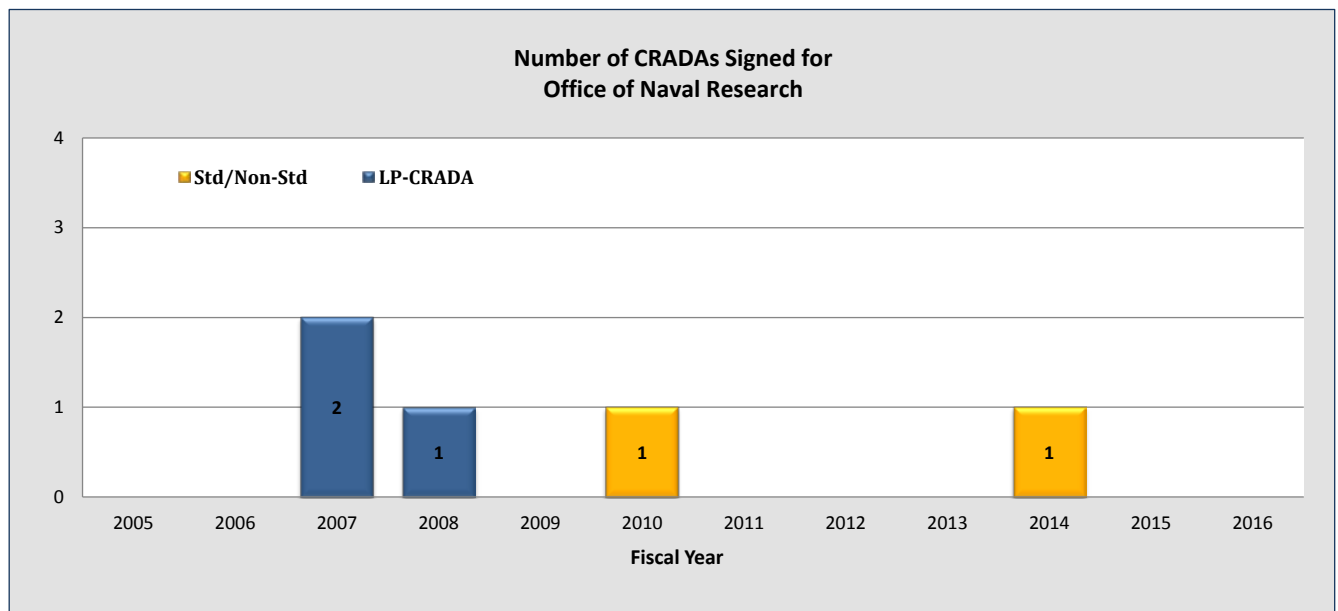
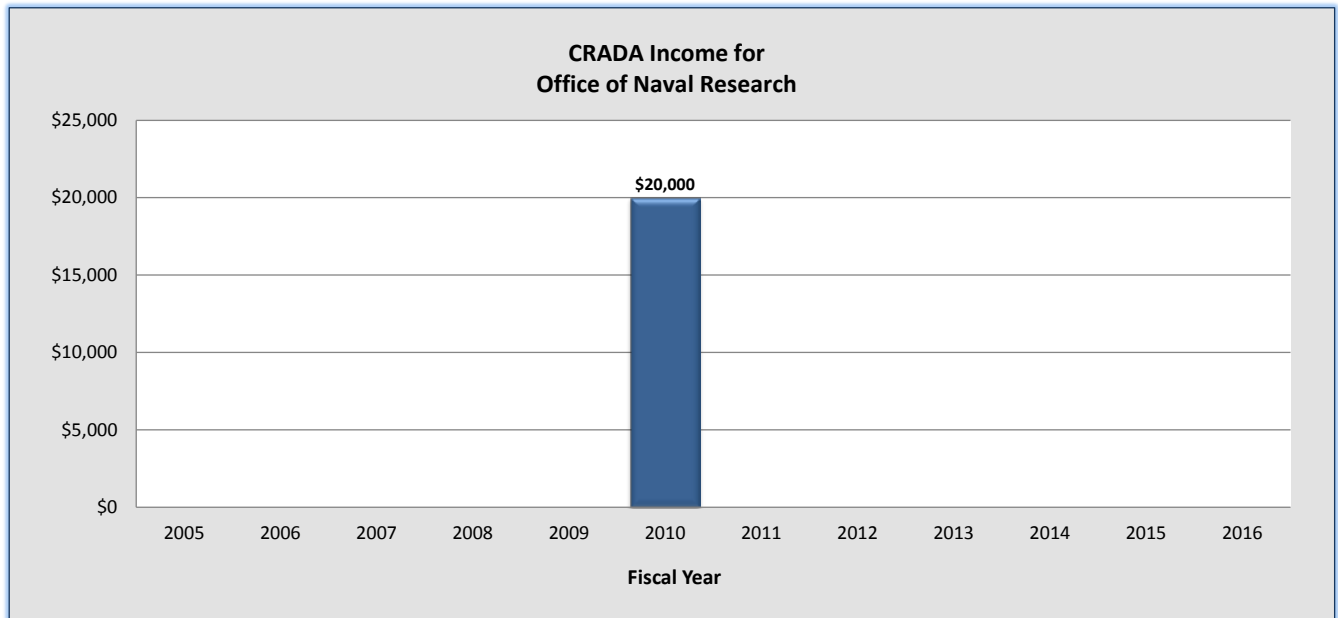
### CRADA History for Office of Naval Research

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$0		4	2	6	6
<b>2005</b>	\$0		-	-	-	6
<b>2006</b>	\$0		-	-	-	6
<b>2007</b>	\$0		-	2	2	8
<b>2008</b>	\$0		-	1	1	9
<b>2009</b>	\$0		-	-	-	9
<b>2010</b>	\$20,000		1	-	1	10
<b>2011</b>	\$0		-	-	-	10
<b>2012</b>	\$0		-	-	-	10
<b>2013</b>	\$0		-	-	-	10
<b>2014</b>	\$0		1	-	1	11
<b>2015</b>	\$0		-	-	-	11
<b>2016</b>	\$0		-	-	-	11

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

\*\* TA-CRADAs are included in the LP-CRADA column.

## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

### CRADA History for Space and Naval Warfare Systems Command, Systems Center Atlantic

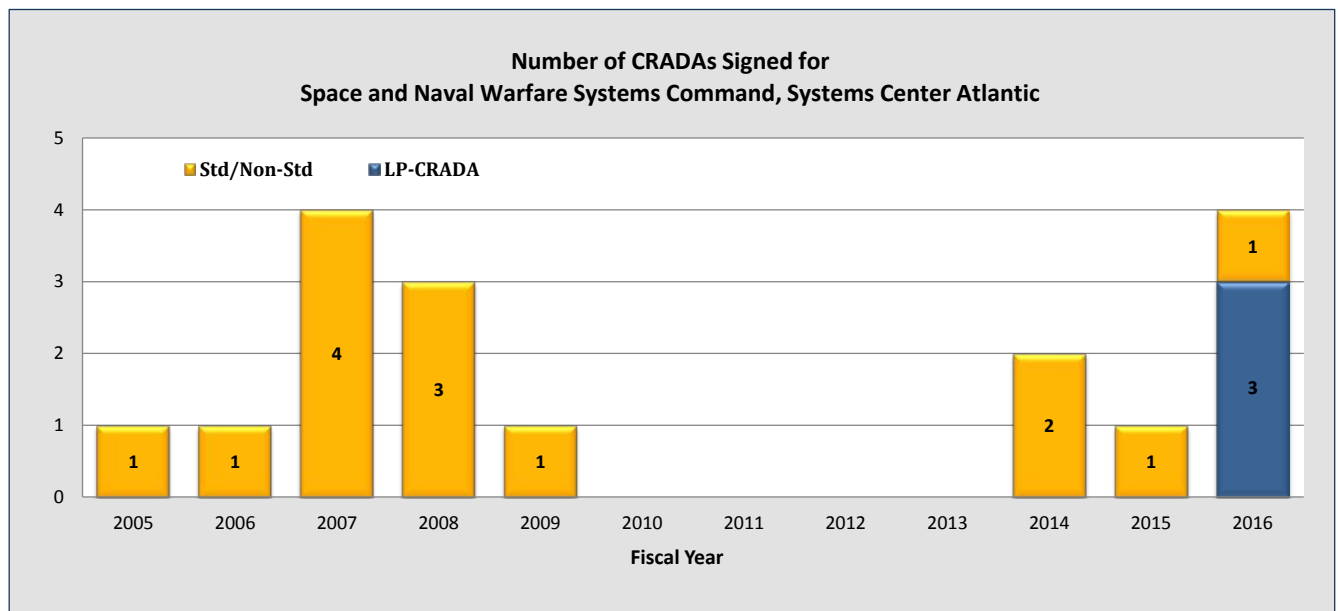
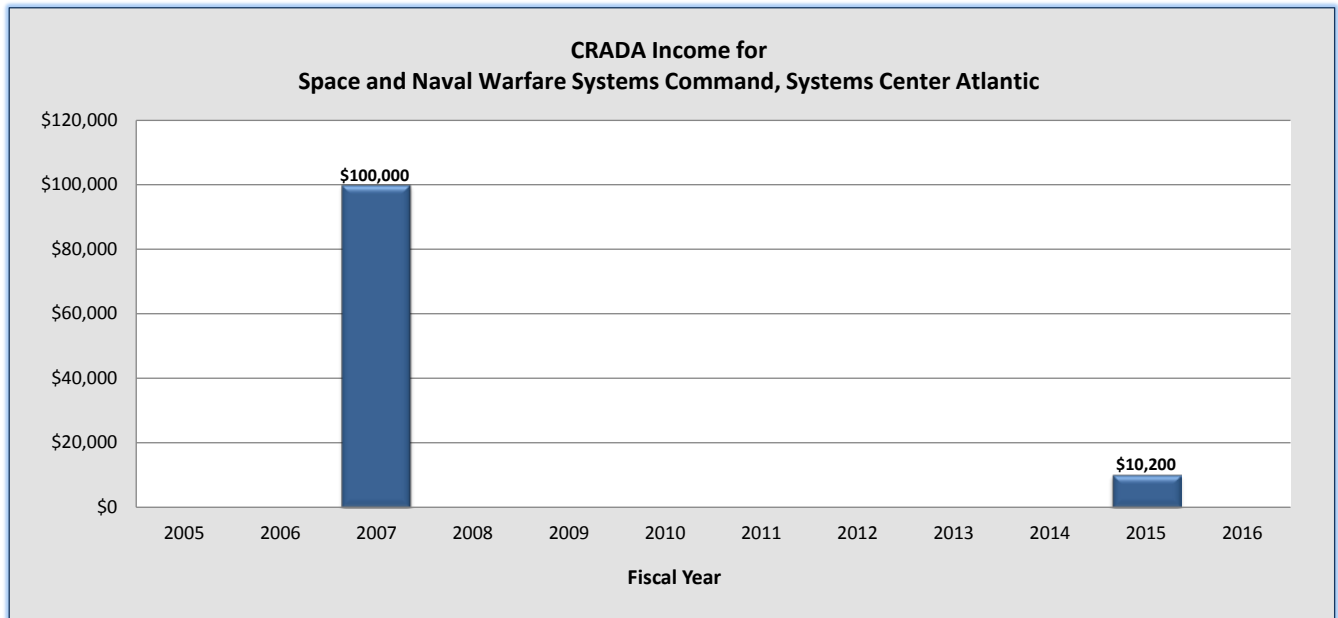
Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$2,146,480		9	-	9	9
<b>2005</b>	\$0		1	-	1	10
<b>2006</b>	\$0		1	-	1	11
<b>2007</b>	\$100,000		4	-	4	15
<b>2008</b>	\$0		3	-	3	18
<b>2009</b>	\$0		1	-	1	19
<b>2010</b>	\$0		-	-	-	19
<b>2011</b>	\$0		-	-	-	19
<b>2012</b>	\$0		-	-	-	19
<b>2013</b>	\$0		-	-	-	19
<b>2014</b>	\$0		2	-	2	21
<b>2015</b>	\$10,200		1	-	1	22
<b>2016</b>	\$0		1	3	4	26

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

\*\* TA-CRADAs are included in the LP-CRADA column.



## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

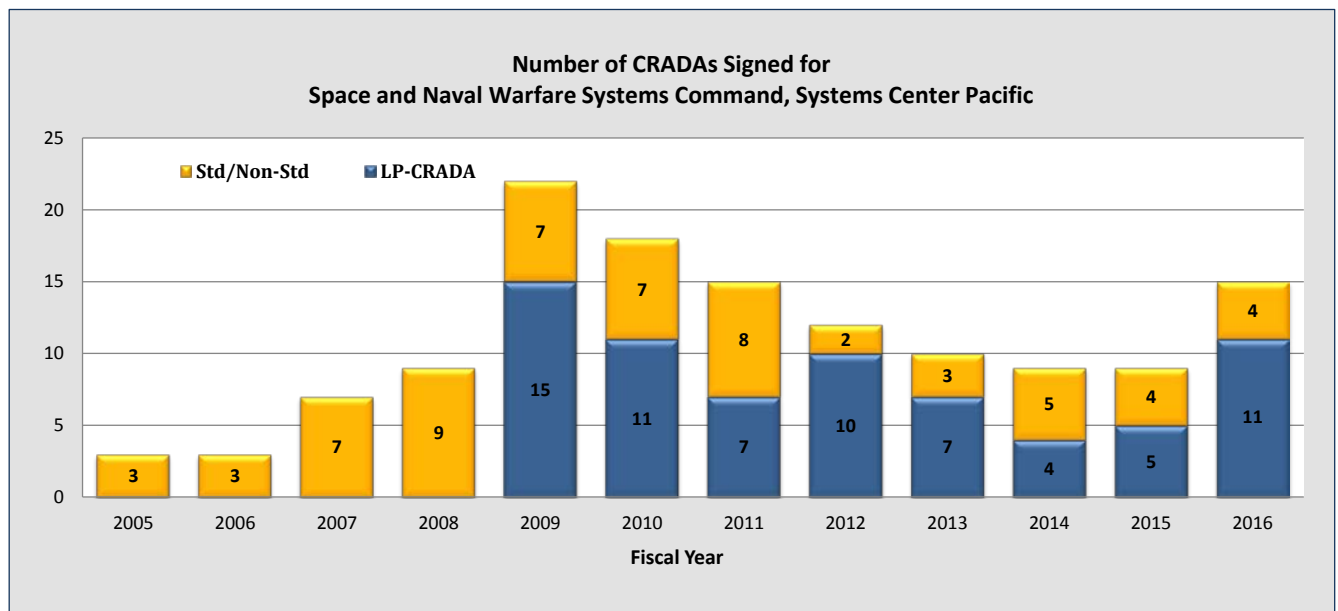
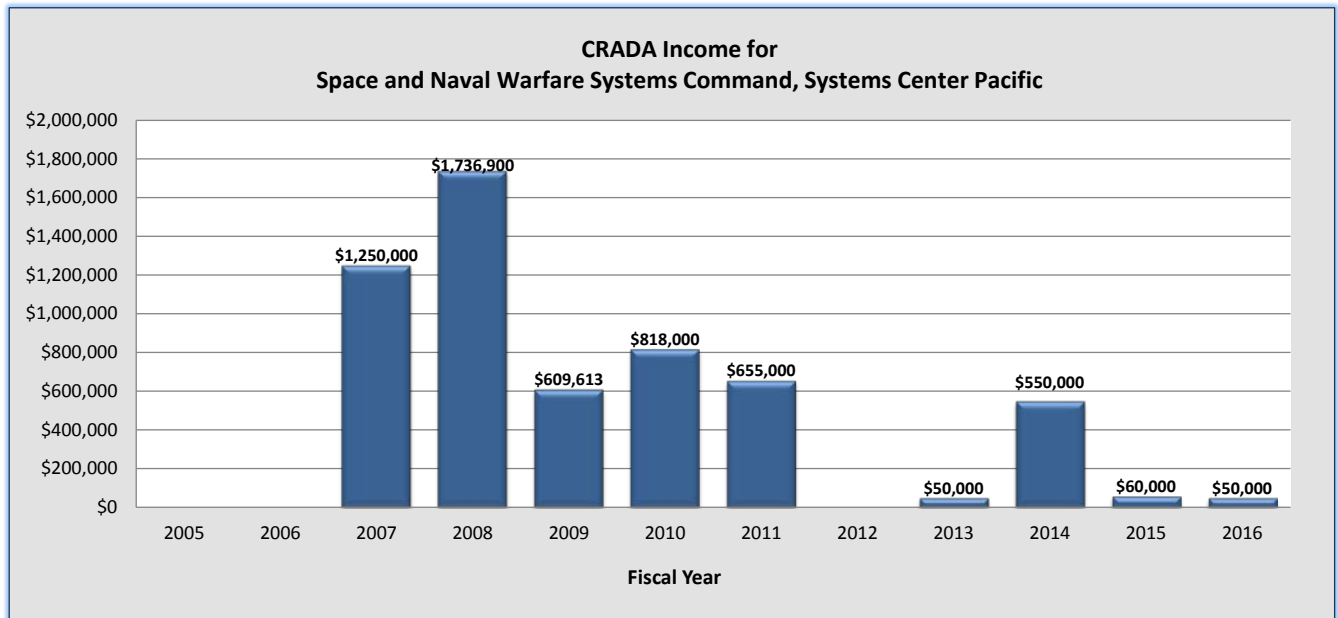
### CRADA History for Space and Naval Warfare Systems Command, Systems Center Pacific

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$5,344,859		53	2	55	55
<b>2005</b>	\$0		3	-	3	58
<b>2006</b>	\$0		3	-	3	61
<b>2007</b>	\$1,250,000		7	-	7	68
<b>2008</b>	\$1,736,900		9	-	9	77
<b>2009</b>	\$609,613		7	15	22	99
<b>2010</b>	\$818,000		7	11	18	117
<b>2011</b>	\$655,000		8	7	15	132
<b>2012</b>	\$0		2	10	12	144
<b>2013</b>	\$50,000		3	7	10	154
<b>2014</b>	\$550,000		5	4	9	163
<b>2015</b>	\$60,000	\$10,000	4	5	9	172
<b>2016</b>	\$50,000		4	11	15	187

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

\*\* TA-CRADAs are included in the LP-CRADA column.

## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

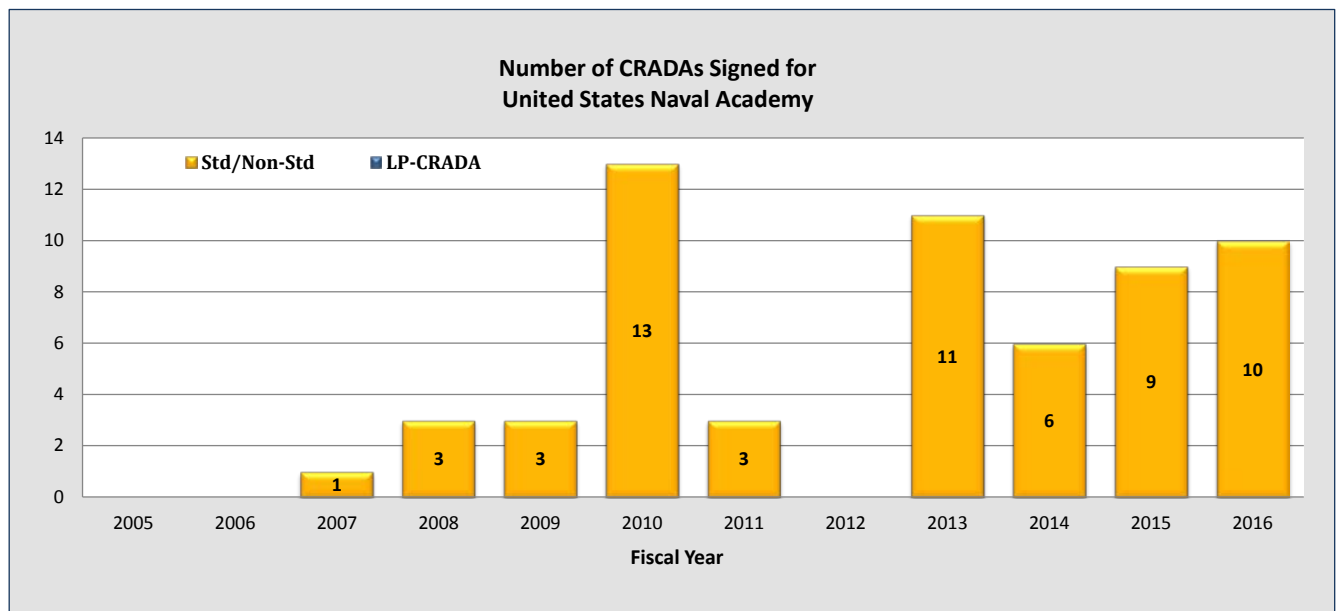
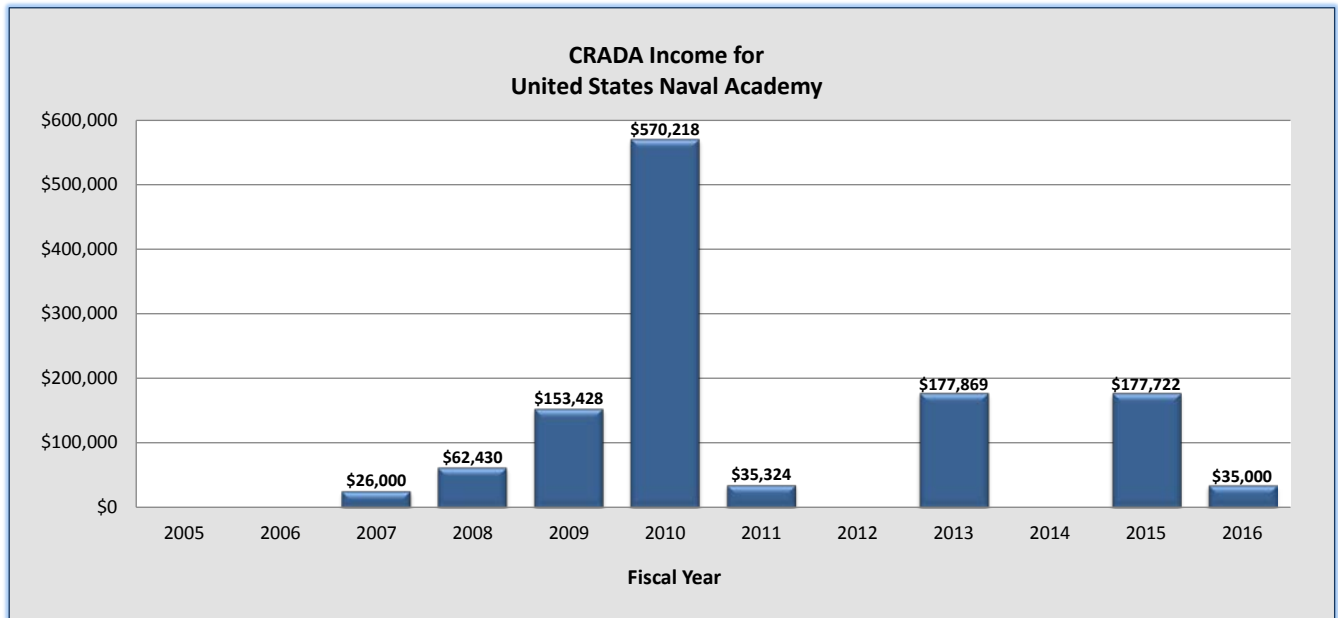
### CRADA History for United States Naval Academy

Fiscal Year	CRADA Income*	FY16 Amendment Income	Number of CRADAs Signed			
			Std/Non-Std	LP-CRADA**	Total	Cumulative
<b>1989-2004</b>	\$2,000		3	-	3	3
<b>2005</b>	\$0		-	-	-	3
<b>2006</b>	\$0		-	-	-	3
<b>2007</b>	\$26,000		1	-	1	4
<b>2008</b>	\$62,430		3	-	3	7
<b>2009</b>	\$153,428		3	-	3	10
<b>2010</b>	\$570,218	\$3,100	13	-	13	23
<b>2011</b>	\$35,324		3	-	3	26
<b>2012</b>	\$0		-	-	-	26
<b>2013</b>	\$177,869	\$33,926	11	-	11	37
<b>2014</b>	\$0		6	-	6	43
<b>2015</b>	\$177,722	\$12,000	9	-	9	52
<b>2016</b>	\$35,000		10	-	10	62

\* The entire income for each CRADA is credited to the year that the CRADA was received at the DON T2 PO. Funds received under any amendments are allocated to the year when the original CRADA was received.

\*\* TA-CRADAs are included in the LP-CRADA column.

## Appendix B FY16 DON CRADA Income and History by Laboratory



## Appendix B FY16 DON CRADA Income and History by Laboratory

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## APPENDIX C

### FY16 CRADA Listing

## Appendix C FY16 CRADA Listing

### Fleet Readiness Center East

Non-Federal Partner	CRADA Number	Subject
Avion/AvTask	NCRADA-FRCE-16-0004	Evaluation of Water Removal Technology from Helicopter Rotor Blades and Proprotor Blades Using a Novel Drying Method
The Boeing Company	NCRADA-FRCE-15-002	Fused Deposition Modeling for Sheet Metal and Composite Tooling
Stratasys, Inc.	NCRADA-FRCE-15-0003	Use of Additive Manufacturing Methods and Materials for Aerospace Applications

### Fleet Readiness Center Southwest

Non-Federal Partner	CRADA Number	Subject
Job Performance Associates, LLC	NCRADA-FRCSW-16-008	Evaluation of an Automated Software Programming Engine and Supportive Hosting Environment for Development of Training Material
John Chadwick Corporation	LP-CRADA-FRCSW-16-006	Equipment Transfer of Digital Optical Micrometer Kit and Surface Replication Kit
Ridgetop Group, Inc.	NCRADA-FRCSW-16-007	Collaboration to Advance Testing and Transition of the CPT1000 Avionics Diagnostic Tool

### Naval Air Warfare Center Aircraft Division, Patuxent River

Non-Federal Partner	CRADA Number	Subject
The Boeing Company	NCRADA-NAWCADPAX-15-281	Additive Manufacturing Production and Data Management
Eckart America Corporation	LP-CRADA-NAWCADPAX-16-300	Transfer of Al-Rich Coatings
EcoLink, Inc.	LP-CRADA-NAWCADPAX-16-297	Transfer of NAVWIPE
Express Chem	LP-CRADA-NAWCADPAX-15-280	Transfer of Paint Stripping Composition
Gortech, LLC	LP-CRADA-NAWCADPAX-16-287	Transfer of Hydraulic Fluid Cleaner Technology
Hentzen Coatings	LP-CRADA-NAWCADPAX-16-296	Material Transfer of Al-Alloy Powder



## Naval Air Warfare Center Aircraft Division, Patuxent River (Continued)

Non-Federal Partner	CRADA Number	Subject
Illinois Tool Works, Inc. dba ITW Pro Brands, Inc.	LP-CRADA-NAWCADPAX-15-278	Transfer of NAVOIL Technology
The Lighthouse for the Blind dba LHB Industries	LP-CRADA-NAWCADPAX-15-276	Transfer of NAVOIL Technology
Lockheed Martin Corporation, acting through its Lockheed Martin Aeronautics Company	NCRADA-NAWCADPAX-16-302	Government Joint Simulation Environment Application Development to Connect to Lockheed Martin's Fifth Generation Simulation Interface
Lockheed Martin Mission Systems and Training; PMA-264; PMA-299; and CAE, Inc.	NCRADA-NAWCADPAX-15-282	Magnetic Survey on MH-60R Aircraft
Northrop Grumman Aerospace Systems	NCRADA-NAWCADPAX-15-263	Carbon Nanotube Material into Electrical Wiring Interconnect System for Naval Applications
Nye Lubricants, Inc.	LP-CRADA-NAWCADPAX-15-279	Transfer of NAVOIL Technology
Radco Industries, Inc.	LP-CRADA-NAWCADPAX-16-288	Transfer of NAVOIL Technology
Radiator Specialty Company and Affiliates	LP-CRADA-NAWCADPAX-15-277	Transfer of NAVOIL Technology
Raytheon Corporation	NCRADA-NAWCADPAX-16-286	Additive Manufacturing Production and Data Management
Scientific & Biomedical Microsystems, LLC	LP-CRADA-NAWCADPAX-16-301	Acoustic Energy Harvesting Device
SELEX Galileo, Inc.	NCRADA-NAWCADPAX-15-261	Research and Integration of Aircraft Survivability Equipment
SurTec, Inc.	LP-CRADA-NAWCADPAX-15-265	Transfer of Corrosion Pigments
University of California, San Diego dba Scripps Institution of Oceanography	LP-CRADA-NAWCADPAX-16-289	Equipment Transfer of Acoustic Daylight Ocean Noise Imaging System Array Transducer

## Naval Air Warfare Center Training Systems Division

Non-Federal Partner	CRADA Number	Subject
APTIMA, Inc.	LP-CRADA-NAWCTSD-15-006	Material Transfer of Scenarios Created in Periscope Operator Adaptive Training
Castellum Development, Inc.	NCRADA-NAWCTSD-16-064	Evaluation of the Advanced Use of Force Training System
Lockheed Martin Mission Systems and Training	LP-CRADA-NAWCTSD-15-005	Material Transfer of DoD Purpose Rights in NAVAIR Portable Source Initiative Datasets
University of West Florida, for and on behalf of its Board of Trustees	NCRADA-NAWCTSD-15-060	Evaluation of Flexible Learning Experience Aviation Classroom Experience

## Naval Air Warfare Center Weapons Division, China Lake

Non-Federal Partner	CRADA Number	Subject
Alliant Techsystems Operations, LLC, a Wholly Owned Subsidiary of Orbital ATK, Inc.	NCRADA-NAWCWDCL-16-268	Multi-Frequency High Shock Survivable Warhead Fuzing
Cadence Design Systems, Inc.	LP-CRADA-NAWCWDCL-16-266	Material Transfer of a copy of the CaDET Training Material
Evolva, Inc.	LP-CRADA-NAWCWDCL-16-264	Material Transfer of Biosynthetic Phenols
Kaman Aerospace Corporation, Precision Products Division	NCRADA-NAWCWDCL-16-267	Multi-Frequency High Shock Survivable Warhead Fuzing
L-3 Fuzing and Ordnance Systems, Inc. a Wholly Owned Subsidiary of L-3 Communications Corporation	NCRADA-NAWCWDCL-16-265	Multi-Frequency High Shock Survivability Warhead Fuzing
Raytheon Company Raytheon Ktech	NCRADA-NAWCWDCL-15-262	Directed Energy Payloads
UbiQD, LLC	NCRADA-NAWCWDCL-16-263	Fluorescent Nanoparticles for Durable Coating Applications

## Naval Air Warfare Center Weapons Division, Point Mugu

Non-Federal Partner	CRADA Number	Subject
Composite Engineering, Inc., a Kratos Company	NCRADA-NAWCWDPM-16-269	Unmanned Aerial Target Systems
The Johns Hopkins University Applied Physics Laboratory	NCRADA-NAWCWDPM-16-270	Autonomous Control of Unmanned Surface Vehicles

## Naval Facilities Engineering and Expeditionary Warfare Center

Non-Federal Partner	CRADA Number	Subject
CO2Nexus, Inc.	NCRADA-NAVFAC EXWC-16-001	Liquid Carbon Dioxide Washing System Technology Demonstration Project
Northwest Energy Innovations, LLC	NCRADA-NAVFAC-EXWC-16-003	NWEI Wave Energy Demonstration at the Navy's Wave Energy Test Site Deep Water Project Site
Ocean Energy USA, LLC	NCRADA-NAVFAC-EXWC-16-002	Ocean Energy USA, LLC Wave Energy Demonstration at the Navy's WETS 60m Project Site

## Naval Medical Center, Portsmouth

Non-Federal Partner	CRADA Number	Subject
American Academy of Otolaryngology - Head and Neck Surgery	LP-CRADA-NMCP-15-297	Material Transfer of SimTube Research Study Research Data
East Carolina University; and Naval Hospital Camp Lejeune	NCRADA-NMCP-15-281	Re-Entry With Resilience: Optimizing Veterans' Vocational Readiness and Resilience (Vocational Vital Signs)
The Regents of the University of California, Irvine; and Naval Hospital Camp Lejeune	NCRADA-NMCP-15-296	Discovery and Validation of Peripheral Biomarkers of Traumatic Brain Injury
University of South Florida - TrialNet Coordinating Center	NCRADA-NMCP-14-256	TrialNet Clinical Affiliate
The University of Utah	NCRADA-NMCP-15-310	PRImary Care Screening Methods Study: Improving Universal Suicide Prevention Screening in Primary Care by Reducing False Positives

## Appendix C FY16 CRADA Listing

### Naval Medical Center, San Diego

Non-Federal Partner	CRADA Number	Subject
Google, Inc.	LP-CRADA-NMCSD-16-461	CIP# NMCSD.2012.0091; Biomarker and Microbiome Analysis in Archived Human Cancers
Google, Inc.	NCRADA-NMCSD-16-471	Machine Learning for Diagnosis Research Studies
Integrity Applications, Inc.	LP-CRADA-NMCSD-16-458	CIP# NMCSD.2012.0091; Biomarker and Microbiome Analysis in Archived Human Cancers
Mayo Clinic; and Naval Health Research Center	NCRADA-NMCSD-16-463	Improved Training Method for Rapid Rehabilitation of Lower Extremity Amputees and Limb Salvage Patients
NeoTract, Inc.	NCRADA-NMCSD-16-465	CIP# NMCSD.2016.0013; Median Lobe Prostatic UroLift Procedure NeoTract® UroLift®
The Regents of the University of California, Los Angeles	LP-CRADA-NMCSD-16-462	Equipment Transfer of Leica-Aperio Whole Slide Imaging Systems
StemCutis, LLC	NCRADA-NMCSD-15-455	A Phase I/II, Open-Label Study to Assess the Safety, Tolerability, and Preliminary Efficacy of a Single Intravenous Dose of Allogeneic Mesenchymal Bone Marrow Cells to Subjects for Cutaneous Photoaging
Strategic Operations, Inc.	LP-CRADA-NMCSD-16-460	Equipment Transfer of the MH-60S Sea Hawk Helicopter Aircraft Platform
The Trustees of Dartmouth College	NCRADA-NMCSD-16-467	CIP# NMCSD.2016.0042; Early Detection of Cochlear Damage from Noise
The University of Alabama; and Johns Hopkins University, on behalf of its Bloomberg School of Public Health	NCRADA-NMCSD-16-470	CIP# NMCSD.2010.0062 and CIP# NHCP.2010.0061; Tinnitus Retraining Therapy Trial
University of Pittsburgh	NCRADA-NMCSD-15-447	Targeted Evaluation, Action and Monitoring of Traumatic Brain Injury Research Protocols

## Naval Medical Research and Development Command

Non-Federal Partner	CRADA Number	Subject
ABT Associates, Inc.	LP-CRADA-NAMRU-6-16-9766	Material Transfer of De-Identified Respiratory Swabs
The Administrators of the Tulane Educational Fund dba Tulane University	LP-CRADA-NMRC-15-9703	Material Transfer of De-Identified Serum Samples and Stool Samples
Advratech, LLC	NCRADA-NAMRU-D-15-9745	Differential Effects of Modafinil on Performance of Fatigue Susceptible and Fatigue Resistant Individuals
Apath, LLC	LP-CRADA-NMRC-16-9901	Material Transfer of Human-Derived Hepatocyte Cell Line
Arizona Board of Regents for and on behalf of Arizona State University	NCRADA-NMRC-15-9681	A Platform for Detecting and Identifying Multiple Infectious Diseases
Bayer CropScience AG	LP-CRADA-NECE-16-9848	Material Transfer of Pesticide Formulation
The Bill & Melinda Gates Foundation	NCRADA-NMRC-15-9537	GCE Phase II: A Core Group of Malaria Liver Stage Antigens Representing Novel Vaccine Candidates
BioFire Defense, LLC; NHRC; and BioFire Diagnostics, LLC	NCRADA-NHRC-15-9709	Evaluation of Accuracy and Ease of Use of the FilmArray™ Respiratory Panel in a CLIA-Waived Clinical Setting
Bio X Cell	LP-CRADA-NMRC-15-9720	Material Transfer of DB3 Hybridoma
Birmingham-Southern College	NCRADA-NAMRU-D-14-9282	Research to Mitigate Fatigue and Motion Sickness in Operational Environments
Board of Supervisors of Louisiana State University and Agricultural and Mechanical College	LP-CRADA-NAMRU-6-15-9538	Material Transfer of cDNA, Primers and Probes for Zika Virus
Board of Supervisors of Louisiana State University and Agricultural and Mechanical College	NCRADA-NAMRU-6-15-9748	Enhancing NAMRU-6 Laboratory Capabilities for Clinic-Based Febrile Surveillance Activities in Latin America
Cartagena University	NCRADA-NAMRU-6-15-9611	Identification of Arboviruses, Hantavirus, Arenavirus, Respiratory Viruses and Other Etiologic Agents from Human Samples
Ceres Nanosciences, Inc.	NCRADA-NMRC-16-9896	Application of Nanotrap Technology to Develop Sensitive Serological and Nucleic Acid Based Diagnoses of Infectious Diseases Using Nanotrap Particles
Children's National Medical Center	LP-CRADA-NMRC-16-9881	Material Transfer of Phage Isolates
Colorado School of Mines	LP-CRADA-NMRC-16-9829	Material Transfer of Enterococcus Specific Phages

## Naval Medical Research and Development Command (Continued)

Non-Federal Partner	CRADA Number	Subject
Commonwealth Scientific and Industrial Research Organisation	NCRADA-NMRC-16-9783	NMRC Viral Sequencing Collaboration
The Council of the Queensland Institute of Medical Research	NCRADA-NAMRU-6-15-9612	Deployment of Optimal-Dose, Volatile Pyrethroids for the Prevention of Biting and Disease Transmission by Insects
Duke University	LP-CRADA-NMRC-16-9874	Material Transfer of De-Identified Biospecimens
Duke University	NCRADA-NAMRU-6-15-9645	An Early Warning System for Vector-Borne Disease in the Amazon
Eccrine Systems, Inc.	NCRADA-NAMRU-D-16-9887	Sweat Biomonitoring for the DoD Operational Environment
Fina BioSolutions, LLC	LP-CRADA-NMRC-15-9675	Material Transfer of CRM Protein
Fred Hutchinson Cancer Research Center	LP-CRADA-NAMRU-SA-15-9679	Material Transfer of Hydrogen Selenide
GearJump Technologies, LLC	LP-CRADA-NAMRU-6-15-9714	Material Transfer of Functional Controlled Release Devices
The Governors of the University of Alberta	LP-CRADA-NMRC-16-9833	Material Transfer of <i>Campylobacter jejuni</i> heptasaccharide-BSA Conjugate
Immuron Limited	LP-CRADA-NMRC-16-9897	Material Transfer of Travelan Hyper Immune Bovine Powder
InBios International, Inc.	NCRADA-NAMRU-6-16-9823	Development of Rapid Diagnostic Devices and Other Lifesaving Products that Sustain the Effectiveness of the U.S. Military
InDevR, Inc.	LP-CRADA-NMRC-16-9769	Material Transfer of Cypher One Hemagglutination Analyzer
InDevR, Inc.	NCRADA-NHRC-16-9773	Clinical Evaluation of FluChip-8G Influenza A + B Assay
Infectious Disease Research Institute	LP-CRADA-NMRC-15-9705	Material Transfer of <i>Enterotoxigenic E. Coli</i> his-tagged Protein Antigens
Infectious Disease Research Institute; Sanofi Pasteur SA; PATH Vaccine Solutions	NCRADA-NMRC-15-9526	ETEC Vaccine Antigen Product and Process Development
Institut Pasteur de Madagascar	LP-CRADA-NMRC-16-9750	Material Transfer of De-Identified Human Sera
Institut Pasteur du Cambodge	LP-CRADA-NAMRU-2-16-9781	Material Transfer of De-Identified Isolates of <i>Streptococcus pneumoniae</i>

## Naval Medical Research and Development Command (Continued)

Non-Federal Partner	CRADA Number	Subject
Institute of Environmental Health, College of Public Health, National Taiwan University	LP-CRADA-NMRC-16-9909	Material Transfer of Samples of De-Identified Human Specimens
Institute of Environmental Health, National Taiwan University	LP-CRADA-NMRC-15-9690	Material Transfer of Recombinant Proteins
Instituto de Investigacion en Microbiologia, Universidad Nacional Autonoma de Honduras	NCRADA-NAMRU-6-15-9738	Identification of Arboviruses, Hantaviruses, Arenaviruses, Respiratory Viruses and Other Etiological Agents from Human Samples
Johns Hopkins University	NCRADA-NMRC-15-9651	Assessment of Tissue Injury and End Organ Damage Following Polytraumatic Injury
Johns Hopkins University; and Uniformed Services University of the Health Sciences	NCRADA-NMRC-14-9191	Non-Invasive Immune Monitoring to Improve Outcomes in Composite Tissue Transplantation
King Saud Bin Abdulaziz University for Health Sciences, King Abdullah International Medical Research Center	LP-CRADA-NMRC-16-9846	Material Transfer of De-identified Samples of Serum, Blood, Urine and Nasal/Oral Swabs
Leiden University Medical Center	LP-CRADA-NMRC-15-9747	Material Transfer of Transgenic Parasites and Plasmids
The Massachusetts General Hospital	NCRADA-NMRC-15-9746	Identification of T-cell Epitopes for Q Fever Vaccine Development
McLaughlin Gormley King Company	LP-CRADA-NECE-15-9728	Material Transfer of Pyriproxyfen, Technical Grade
Memorial Sloan Kettering Institute for Cancer Research; and Walter Reed National Military Medical Center	NCRADA-NMRC-15-9604	Improving Survival Estimates in Patients Needing Surgery for Bone Metastases
Menzies School of Health Research	LP-CRADA-NMRC-15-9506	Material Transfer of Clinical Samples for Assessment of a New Rapid Diagnostic Test for Melioidosis
Microdermis Corporation	NCRADA-NMRC-15-9620	<i>In vivo</i> Assessment of Provodine as a Pre-Surgical Scrub and Skin Preparation for the Prevention of Surgical Infections and Biofilm Formation in Clean and Contaminated Wounds
MIE University	LP-CRADA-NMRC-16-9889	Material Transfer of PfCSP/Py Parasite, a Transgenic <i>Plasmodium yoelii</i> Rodent Malaria Parasite Clone

## Naval Medical Research and Development Command (Continued)

Non-Federal Partner	CRADA Number	Subject
Najit Technologies, Inc.	LP-CRADA-NMRC-15-9724	Material Transfer of a Non-GMP WCB of <i>C. jejuni</i> Strain, CG8421
Nanosphere, Inc.	NCRADA-NAMRU-6-16-9789	Enteric Pathogens Flex™ Method Comparison
National Strategic Research Institute	NCRADA-NMRC-16-9784	BDRD Collaboration with NSRI via Dillon Cunningham as Visiting Scientist at BDRD
Nucleo de Doencas Infecciosas	NCRADA-NAMRU-6-16-9824	Development of Life Sustaining Products and Knowledge to Identify, Diagnose and Treat Viral Diseases of Common Interest to Brazil and the United States
PATH	LP-CRADA-NMRC-16-9922	Material Transfer of DNA Vaccine Constructs, Protein Expression DNA Constructs and Adeno 5 Virus Constructs
Rector and Visitors of the University of Virginia	LP-CRADA-NMRC-15-9741	Material Transfer of Amana, RFS1MP2, Laboratory Microwave Oven
Regional Medical Research Center, Northeast Region	LP-CRADA-NMRC-15-9731	Material Transfer of Recombinant Proteins for ELISA and Lyophilized LAMP Reagents
Regional Medical Research Center, Northeast Region, Dibrugarh, Assam, India	LP-CRADA-NMRC-15-9717	Material Transfer of each strain of <i>Rickettsia typhi</i> Wilmington, <i>Rickettsia conorii</i> Morocco, <i>Orientia tsutsugamushi</i> Kato, <i>Orientia tsutsugamushi</i> Karp and <i>Orientia tsutsugamushi</i> Gilliam
Repurposed Therapeutics, Inc.	NCRADA-NAMRU-D-13-9106	Intranasal Scopolamine for the Prevention of Motion Sickness in Military Extreme Environments
Sanaria, Inc.; National Institute of Allergy and Infectious Diseases	NCRADA-NMRC-16-9541	Research Collaboration Agreement for RNA Sequencing of Human Blood Samples for the Evaluation of Malaria Vaccine Effectiveness
Sanaria, Inc.; Walter Reed Army Institute of Research	NCRADA-NMRC-15-9531	Clinical Trial of PfSPZ Vaccine Administered by Direct Venous Inoculation: Dose Optimization with Heterologous Challenge in Healthy Malaria-Naïve Adults
Stemnion, Inc.	NCRADA-NAMRU-SA-15-9607	Evaluation of Amnion-Derived Multipotent Progenitor Cells and ST266 in Promoting Craniomaxillofacial Regenerative Bone Healing in Critical Size Calvarial Defects
Stony Brook University School of Medicine	LP-CRADA-NAMRU-6-15-9736	Material Transfer of PCR Data and Microscopy Results Along With Non-Identifying Epidemiologic Data
The Trustees of Princeton University	NCRADA-NMRC-15-9532	Biodemography of Health, Social Factors and Life Challenge
Universidad Nacional Amazonica de Madre de Dios	NCRADA-NAMRU-6-16-9764	Effects of Anthropogenic Habitat Perturbation on Rodent Population Dynamics and Risk of Rodent-Borne Diseases in Madre de Dios



## Naval Medical Research and Development Command (Continued)

Non-Federal Partner	CRADA Number	Subject
University of Barcelona	LP-CRADA-NMRC-16-9830	Material Transfer of each Strain of <i>C. jejuni</i> , 81-176 and DB179
University of California San Diego, Department of Medicine	LP-CRADA-NMRC-16-9798	Material Transfer of Phage Isolates
University of Cincinnati on behalf of the College of Medicine	LP-CRADA-NMRC-15-9713	Material Transfer of Each Phage Cocktail of <i>Anti-Pseudomonas aeruginosa</i>
University of Colorado Department of Mechanical Engineering, Materials Science & Engineering and Bioengineering	NCRADA-NMRC-14-9440	Peritoneal Microbubble Oxygenation Treatment of DCS
University of Georgia Research Foundation, Inc.	NCRADA-NAMRU-SA-16-9730	Rapid Detection of Multidrug Resistant Microorganisms by Surface-Enhanced Raman Spectroscopy
University of Kansas Biodiversity Institute	LP-CRADA-NAMRU-6-16-9821	Material Transfer of Wild Bird Samples: Sera and Tissue
University of Kentucky Research Foundation	NCRADA-NAMRU-6-15-9660	The Association Between Latent Tuberculosis Infection and Myocardial Infarction in a High Tuberculosis Burden Setting
University of Malaya Represented by Tropical Infectious Diseases Research & Education Centre	LP-CRADA-NMRC-15-9609	Material Transfer of MERS-CoV Viral Stocks
University of Maryland, Baltimore	LP-CRADA-NMRC-15-9722	Material Transfer of Post-Immune Rabbit Sera and Pre-Immune Sera
University of Maryland, Baltimore	NCRADA-NAMRU-SA-15-9735	Targeting Best Practices for Cerebral Protection During Shock States
University of Pittsburgh	NCRADA-NAMRU-SA-15-9729	Investigation of Central Nervous System Physiologic, Hematologic, Immunologic and Metabolic Responses to Traumatic Hemorrhagic Shock and Resuscitation
University of Texas	NCRADA-NAMRU-6-15-9561	Microbiome and Infectious Disease Research
University of Texas at El Paso	LP-CRADA-NMRC-16-9804	Material Transfer of A-172, A-172-Schlafen (-) and A-172-Sclafen (+) Cell Lines
The University of Texas Medical Branch	LP-CRADA-NMRC-16-9759	Plasmids and Plasmid Controls
The University of Texas at San Antonio	NCRADA-NAMRU-SA-16-9758	Evaluation of Therapeutics in Promoting Craniomaxillofacial Regenerative Bone Healing in Critical Size Bone Defects

## Naval Medical Research and Development Command (Continued)

Non-Federal Partner	CRADA Number	Subject
University of Washington	LP-CRADA-NAMRU-6-16-9757	Material Transfer of De-Identified Human Cerebrospinal Samples
Vanderbilt University Medical Center Vaccine Center	LP-CRADA-NMRC-15-9666	Material Transfer of Purified Monoclonal Antibody Clones
Wake Forest University Health Sciences	LP-CRADA-NMRC-16-9860	Material Transfer of Samples of CSF and Serum from De-identified Patient Samples
Washington University	NCRADA-NMRC-16-9761	Serologic Evaluation of Markers Associated Disease Severity and Other Endpoints in ETEC Human Challenge
Worldwide Kulicide, LLC	LP-CRADA-NECE-16-9899	Material Transfer of Kulicide

## Naval Postgraduate School

Non-Federal Partner	CRADA Number	Subject
Flynn Intel Group, Inc.	LP-CRADA-NPS-16-0091	Equipment Transfer of GreenZone Systems Development Kit
Knowledgebridge International, Inc.	LP-CRADA-NPS-16-0092	Equipment Transfer of OpenBridgeBuilder Android Application Development Software
SAAB Defense and Security USA, LLC; and SAAB AB, Business Area Surveillance	NCRADA-NPS-16-0215	Littoral Flotilla Study Phase II
Stochastech Corporation dba Tempest Technologies	NCRADA-NPS-16-0214	Pseudospectral Optimal Control for Flight Trajectory Optimization
The University of Texas at Austin	NCRADA-NPS-15-0212	Defending Interdependent Infrastructure Networks

## Naval Research Laboratory

Non-Federal Partner	CRADA Number	Subject
Argon ST, Inc., a Boeing Company	NCRADA-NRL-16-591	HF Surface Wave and Over-the-Horizon Radar Research Employing SHARC HF Sensors Platforms
Camlin Limited	NCRADA-NRL-16-602	Tunable Resonant Cavity Infrared Detector
Clemson University	NCRADA-NRL-16-598	Multiaxial Material Testing System Design, Prototyping and Verification
DHPC Technologies	NCRADA-NRL-16-589	Photovoltaic Devices for Laser Power Transfer
General Atomics Aeronautical Systems, Inc.	NCRADA-NRL-16-587	ISAR Processing for Development of a Maritime Mode Capability in the Lynx Radar
Google, Inc.	NCRADA-NRL-15-565	Global Cloud Layer
Hawaii Pacific Teleport	NCRADA-NRL-16-603	Experimental Use of WGS to Support the Defense Media Activity's Defense Video and Imagery Distribution System at the Hawaii Pacific Teleport
Honeywell International, Inc.	NCRADA-NRL-15-582	Interband Cascade Light Emitting Diodes for Chemical Spectroscopy
IRflex Corporation	NCRADA-NRL-15-584	Mid-Infrared Laser Power Scaling Technology
Monsanto Company	NCRADA-NRL-16-595	Soil Printing for Isolation of Microorganisms
North Carolina State University	NCRADA-NRL-15-586	Bio/Synthetic Material and Systems for Biosensor and Body Area Network Development
Packet Digital, LLC	NCRADA-NRL-16-596	Solar Soaring Unmanned Aerial Vehicles
Packet Digital, LLC	NCRADA-NRL-16-607	Radiation Hardened SRAM Neutron Detector
Q-Peak, Inc.	NCRADA-NRL-16-588	Tailored IR Fiber for Mid-IR Fiber Combiners
Raytheon Company	NCRADA-NRL-16-597	Ultra-Wideband Array Characterization
Semprius, Inc.	NCRADA-NRL-15-579	Lightweight and Radiation Tolerant Concentrator Modules
Semprius, Inc.	NCRADA-NRL-16-590	Micro-Scale Ultra-High Efficiency CPV/Diffuse Hybrid Arrays Using Transfer Printing
St. Cloud State University; and Embry-Riddle Aeronautical University	NCRADA-NRL-16-592	Redline DASH Demonstration Instrument Observations from St. Cloud State University
UNIK – University Graduate Center	NCRADA-NRL-16-593	CT-Analyst® Project for Oslo, Norway
University of Maryland	NCRADA-NRL-15-583	Numerical Tools for Mitigation of Methane Explosions in Coal Mines
University of Notre Dame	NCRADA-NRL-16-604	Radiation Effects on Antimony-Based MOS Transistors
University of Surrey	NCRADA-NRL-15-585	Pressure-Dependent Emission Characteristics of Interband Cascade Lasers

## Naval Surface Warfare Center, Carderock Division

Non-Federal Partner	CRADA Number	Subject
Advanced Aircraft Company	LP-CRADA-NSWCCA-16-269	Capability Demonstration of a Unmanned Aerial System
Advanced Rotorcraft Technology, Inc.	NCRADA-NSWCCA-15-212	Rotorcraft Launch and Recovery
Aero Dynamix, Inc.	LP-CRADA-NSWCCA-16-255	Lighting Modifications for Night Vision Imaging Systems
Alcoa Defense, Inc.	NCRADA-NSWCCA-15-216	Development of a New Marine Temper for Aluminum
Alex Hagmuller dba AquaHarmonics	LP-CRADA-NSWCCA-16-238	Equipment Transfer of a Wave Energy Converter Utilizing a Point Absorber with Latching/De-Clutching Control
Altavian, Inc.	LP-CRADA-NSWCCA-16-267	Capability Demonstration of a Unmanned Aerial Vehicle
Applied Signals Intelligence, Inc.	LP-CRADA-NSWCCA-16-256	Signal Intercept and Direction Finding System
AXNES, Inc.	LP-CRADA-NSWCCA-16-254	Polycon Next Generation Wireless Intercom System
BAE Systems Information and Electronic Systems Integration, Inc.	LP-CRADA-NSWCCA-16-268	Modular Scalable Small Form Factor Emitter Mapper Capability for Sea, Air and Land Applications
Bren-Tronics, Inc.	NCRADA-NSWCCA-15-222	Advanced Battery Development
CalWave Power Technologies	LP-CRADA-NSWCCA-16-245	Equipment Transfer of a Wave Energy Converter Utilizing a Submerged Pressure Differential Device
Carpenter Technology Corporation	NCRADA-NSWCCA-15-213	Welding Consumable Development
Flex Force Enterprises, LLC	LP-CRADA-NSWCCA-16-248	Equipment Transfer of ASP
Florida Atlantic University	NCRADA-NSWCCA-16-224	Underwater Electromagnetic Technology Development
Fraser Optics, LLC	LP-CRADA-NSWCCA-16-227	Equipment Transfer of Gyro Stabilized Platforms for Thermal and Visual Imaging Systems
Geodesicx, Inc.	LP-CRADA-NSWCCA-16-260	Technology Demonstration of an Aerial Radio Direction-Finding System
Inmarsat Solutions, Inc.	LP-CRADA-NSWCCA-16-247	Equipment Transfer of Broadband Maritime Communications System, GX100PM
Itri Corporation	LP-CRADA-NSWCCA-16-231	Equipment Transfer of Hawk-Eye
KAB Laboratories, Inc.	LP-CRADA-NSWCCA-16-266	Capability Demonstration of a Portable Direction Finding and Signals Intelligence System

## Naval Surface Warfare Center, Carderock Division (Continued)

Non-Federal Partner	CRADA Number	Subject
L-3 Communications Corporation, Linkabit Division	LP-CRADA-NSWCCA-16-261	Capability Demonstration for Maritime and On-Land Direction Finding System
LGS Innovations, LLC	LP-CRADA-NSWCCA-16-253	Radio Frequency Direction Finding and Geolocating Capability Demonstration
Lockheed Martin Missiles and Fire Control	LP-CRADA-NSWCCA-16-223	Equipment Transfer of Turreted Systems Sensor
M3 Wave, LLC	LP-CRADA-NSWCCA-16-237	Equipment Transfer of a Wave Energy Converter Utilizing a Point Absorber with Latching/De-Clutching Control
Martin UAV, LLC	NCRADA-NSWCCA-15-220	E-VBAT
Mocean Energy, LLC	LP-CRADA-NSWCCA-16-235	Equipment Transfer of a Wave Energy Converter, Utilizing a Point Absorber with Cross-Coupled Pitch, Heave and Flex Response
Mountain RF Sensors, Inc.	LP-CRADA-NSWCCA-16-262	Direction Finding System Consisting of a Conformal Mount Single Antenna and an Integrated Receiver/Processor
Nickolas P. Wynn dba IProTeck	LP-CRADA-NSWCCA-16-241	Equipment Transfer of Floating Oscillating Water Column Wave Energy Converter with Internal Turbine Generator
Northrop Grumman Systems Corporation	NCRADA-NSWCCA-16-228	ANTX Collaboration
Oscilla Power, Inc.	LP-CRADA-NSWCCA-16-244	Equipment Transfer of a Wave Energy Converter Utilizing a Two-Body Multi-Mode Point Absorber, Triton
Physical Sciences, Inc.	LP-CRADA-NSWCCA-16-257	InstantEye HAVOC RF Survey Payload
Planck Aerosystems, Inc.	LP-CRADA-NSWCCA-16-264	Capability Demonstration of Autonomous Guidance, Navigation, and Landing of Small Unmanned Aerial System Platform onto Moving Vessel
QRC Technologies	LP-CRADA-NSWCCA-16-258	Capability Demonstration of WBT 3000 Remote RF System
Radio Reconnaissance Technologies, Inc.	LP-CRADA-NSWCCA-16-263	Miniature, Man Portable RF Direction Finder System
Re Vision Consulting, LLC	LP-CRADA-NSWCCA-16-240	Equipment Transfer of a Wave Energy Converter Utilizing a Sub-Sea Pressure-Differential Point-Absorber
Rohde & Schwarz USA, Inc.	LP-CRADA-NSWCCA-16-270	Maritime Direction Finder Systems

## Naval Surface Warfare Center, Carderock Division (Continued)

Non-Federal Partner	CRADA Number	Subject
Rohrer Technologies, Inc.	LP-CRADA-NSWCCA-16-242	Equipment Transfer of a Wave Energy Converter Utilizing a Wave Terminator Using Floodable and Submergible Elongated Wave Front Parallel Float
SeaLandAire Technologies, Inc.	LP-CRADA-NSWCCA-16-233	Equipment Transfer of a Man-Portable Unmanned Surface Vessel
Sea Potential, LLC	LP-CRADA-NSWCCA-16-243	Equipment Transfer of a Wave Energy Converter Utilizing a Multi-Mode Power Capture Point Absorber, DUO
Special Operations Solutions, LLC	LP-CRADA-NSWCCA-16-230	Equipment Transfer of MX-10MS EO/IR Sensor System with GeoFOCIS Control Software
Stark Aerospace, Inc.	LP-CRADA-NSWCCA-16-234	Equipment Transfer of Tethered Aerial Drone with ISR Capability
TBMUAS, Inc.	LP-CRADA-NSWCCA-16-259	Vessel Launched VTOL Radio Direction Finding Unit Demonstration
Visible Welding	NCRADA-NSWCCA-15-221	Development of Welding Process Imaging
Wave Energy Partners, LLC	LP-CRADA-NSWCCA-16-239	Equipment Transfer of a Wave Energy Converter Utilizing a Combined Oscillating Wave Surge Class and Heaving Device
XONE Technology, Inc.	LP-CRADA-NSWCCA-16-265	Capability Demonstration of a High-Precision WiFi Geolocation System

## Naval Surface Warfare Center, Corona Division

Non-Federal Partner	CRADA Number	Subject
Microsphere Material Solutions, LLC	NCRADA-NSWCCORDIV-16-001	Commercialization of NSWC Corona Invention Under U.S. Patent 9,102,087 Foams Made of Amorphous Hollow Spheres and the Manufacture Thereof

## Naval Surface Warfare Center, Crane Division

Non-Federal Partner	CRADA Number	Subject
5D Analytics, LLC	NCRADA-NSWCCD-15-166	R&D of Project Management Systems and Methodologies and the Commercialization of U.S. Patent Number 8,156,050 and U.S. Patent Number 12/623,374
B5 Systems, Inc.	NCRADA-NSWCCD-15-163	Commercialization of U.S. Patent Number 7,765,731 Quick Release Gun Sight Adapter
Battery Innovation Center Institute, Inc.	NCRADA-NSWCCD-16-187	Joint R&D of Large Scale Energy Storage and Associated Equipment Test and Evaluation Capability
Canon USA, Inc.	NCRADA-NSWCCD-15-172	Low-Light and High Resolution Camera Characterization, System Integration and Performance Evaluation
CelerAscent, LLC	NCRADA-NSWCCD-16-185	Commercialization of U.S. Patent Application 15-140,892, International Patent Application PCT/US16/29707 Photonic Hybrid Receive Antenna
Custom Analytical Engineering Systems, Inc.	NCRADA-NSWCCD-16-175	Special Purpose Munition Engineering Research and Development
Kent Optronics, Inc.	NCRADA-NSWCCD-16-188	Wide Field of View Night Vision Goggle Testing
Mercury Systems, Inc.	NCRADA-NSWCCD-15-173	Assessment of Mercury Systems, Inc. Security Products
Mr. Steven Craig Jackson, Jr.	NCRADA-NSWCCD-16-183	Cyber Security R&D
Purdue University; South Dakota School of Mines and Technology; and Iowa State University of Science and Technology	NCRADA-NSWCCD-15-154	Reformulation and Processing Techniques for Energetic Compositions
Tennessee State University	NCRADA-NSWCCD-15-165	Cyber Physical Systems Exploitation and Security
Tennessee State University	NCRADA-NSWCCD-15-171	Operational Profile Analysis
Trine University	NCRADA-NSWCCD-16-176	Rosam Lift Assembly Design
Trine University	NCRADA-NSWCCD-16-177	In-Bore Projectile Velocity Measurement
Trine University	NCRADA-NSWCCD-16-178	Multi-Purpose CNC Router/3D Printer Analysis
The Trustees of Indiana University	NCRADA-NSWCCD-16-182	Cyber Security R&D
The Trustees of Indiana University	NCRADA-NSWCCD-16-190	Self Assembly of Nanomaterials for Structural Health Monitoring of Navy Materials
University of Cincinnati	NCRADA-NSWCCD-16-186	Application of Arrayed Electrowetting Prisms and Switchable Retro-Reflectors
WarpSpec, Inc.	NCRADA-NSWCCD-15-170	Commercialization of U.S. Patent Numbers 7,999,230, 8,368,996 and 8,526,067 Tunable Detection System

## Appendix C FY16 CRADA Listing

### Naval Surface Warfare Center, Dahlgren Division

Non-Federal Partner	CRADA Number	Subject
Arizona State University	NCRADA-NSWCDD-16-196	Joint Chemical Sensor Development
Boise Technology, Inc.	LP-CRADA-NSWCDD-16-193	Equipment Transfer of Vibrational Sum Frequency Generation Spectroscopy Spectrometer System
Johns Hopkins University	NCRADA-NSWCDD-16-195	Data Fusion Research
JWK Corporation	NCRADA-NSWCDD-16-191	Low Energy Nuclear Reactions Materials Design and Characterization
L-3 Mustang Technology	NCRADA-NSWCDD-16-198	57mm ALaMO Projectile Development
Lockheed Martin Corporation	NCRADA-NSWCDD-16-187	High Power Electromagnetics for Electronic Attack Force Protection
The Research Foundation for the State University of New York on behalf of University at Buffalo; and The University of Texas at Austin	NCRADA-NSWCDD-16-190	Gain-Loss Coupled Synthetic Plasmonic Metafilms - Quantum Inspired Active Functional Metamaterials
Varilog Research, Inc.	LP-CRADA-NSWCDD-16-194	Equipment Transfer of AN/SLQ-32(V)6 Shipboard Electronic Warfare System

### Naval Surface Warfare Center, Indian Head Explosive Ordnance Disposal Technology Division

Non-Federal Partner	CRADA Number	Subject
Austin Star Detonator	NCRADA-NSWC IHEODTD-16-089	Electronic Time Delay Cartridge and Component Development
Cartridge Actuated Devices, Inc.	NCRADA-NSWC IHEODTD-16-088	Development of Improved Design, Production and Component Availability for CAD/PAD Applications
General Dynamics Ordnance and Tactical Systems	NCRADA-NSWC IHEODTD-16-091	Insensitive Explosives and Munitions Research and Development
National Association of Canine Scent Work	NCRADA-NSWC IHEODTD-16-097	Exploring the Generalization-Discrimination Balance in Odor Detection Canines



## Naval Surface Warfare Center, Indian Head Explosive Ordnance Disposal Technology Division (Continued)

Non-Federal Partner	CRADA Number	Subject
Northrop Grumman Systems Corporation, Mission Systems Missile Defense & Protective Systems Division and Advanced Concepts & Technologies Division	NCRADA-NSWC IHEODTD-16-096	Research, Development, Test and Evaluation of Component Technologies for Force Protection Applications
Viavi Solutions	NCRADA-NSWC IHEODTD-16-084	Development of Viavi Solutions MicroNIR Algorithms and Spectra Libraries for the Identification of Bulk Solid and Liquid Materials as Well as for Factor for Use by the EOD Warfighter
WM Robots, LLC	NCRADA- NSWC IHEODTD-16-093	VMR3G Housing Support Adapter

## Naval Surface Warfare Center, Panama City Division

Non-Federal Partner	CRADA Number	Subject
DeTect, Inc.	NCRADA-NSWCPCD-16-048	Collaborative Investigation in the Detection and Tracking of Small, Low Observable Targets

## Naval Undersea Warfare Center, Division Newport

Non-Federal Partner	CRADA Number	Subject
Alare Technologies, LLC	NCRADA-NUWC DIVNPT-15-1092	Submarine Launched Unmanned Aerial Systems Concept Study
The Arizona Board of Regents, University of Arizona	NCRADA-NUWC DIVNPT-16-1163	Center of Excellence for Fiber Lasers
Bluefin Robotics Corporation	LP-CRADA-NUWC DIVNPT-16-1171	Topside
Bluefin Robotics Corporation	LP-CRADA-NUWC DIVNPT-16-1178	2016 Annual Naval Technology Exercise
DBV Technology, LLC	LP-CRADA-NUWC DIVNPT-16-1234	2016 Annual Naval Technology Exercise

## Naval Undersea Warfare Center, Division Newport (Continued)

Non-Federal Partner	CRADA Number	Subject
Digital Design & Imaging Service, Inc.	LP-CRADA-NUWC DIVNPT-16-1179	2016 Annual Naval Technology Exercise
Digital Design & Imaging Service, Inc.	NCRADA-NUWC DIVNPT-16-1157	2016 Annual Naval Technology Exercise
iXBlue, Inc.	LP-CRADA-NUWC DIVNPT-16-1159	Material Transfer iXBlue Fiber Optic Gyroscopes
Leidos	LP-CRADA-NUWC DIVNPT-16-1192	Topside
Liquid Robotics, Inc.	LP-CRADA-NUWC DIVNPT-16-1165	Topside
Liquid Robotics, Inc.	LP-CRADA-NUWC DIVNPT-16-1232	Material Transfer of Wave Glider Shoreside Interface Software
Lockheed Martin Corporation	NCRADA-NUWC DIVNPT-16-1180	2016 Annual Naval Technology Exercise
Lockheed Martin Corporation, acting through its Mission Systems and Training Business Area	LP-CRADA-NUWC DIVNPT-16-1174	Topside
Lockheed Martin Corporation, Missiles and Fire Control	NCRADA-NUWC DIVNPT-15-1096	Long Range Anti-Ship Missile Capsule Sub-Surface Performance
Maritime Arresting Technologies, LLC	NCRADA-NUWC DIVNPT-16-1154	Arresting Net for Small Underwater Targets
Mercury Data Systems, Inc.	NCRADA-NUWC DIVNPT-15-1121	NUWC Virtual Gyro Technology Transfer
Mikel, Inc.	LP-CRADA-NUWC DIVNPT-16-1181	2016 Annual Naval Technology Exercise
MIT Lincoln Laboratory	NCRADA-NUWC DIVNPT-15-1113	High-Rate Extended Range Undersea Optical Communication Links
MITRE Corporation	NCRADA-NUWC DIVNPT-15-1102	Application of Radar Technology to the Multi-Static Sonar Problem
Morsecorp, Inc.	LP-CRADA-NUWC DIVNPT-16-1225	Topside
Northrop Grumman Aerospace Systems	LP-CRADA-NUWC DIVNPT-16-1173	Topside
Northrop Grumman Systems Corporation	LP-CRADA-NUWC DIVNPT-16-1170	Topside
Northrop Grumman Systems Corporation	NCRADA-NUWC DIVNPT-16-1182	2016 Annual Naval Technology Exercise
Ocean Aero	LP-CRADA-NUWC DIVNPT-16-1210	Topside
Ocean Aero	NCRADA-NUWC DIVNPT-16-1193	2016 Annual Naval Technology Exercise
Ohara Corporation	LP-CRADA-NUWC DIVNPT-15-1110	Material Transfer of Ceramic Electrolyte Plates

## Naval Undersea Warfare Center, Division Newport (Continued)

Non-Federal Partner	CRADA Number	Subject
Scripps Institution of Oceanography	LP-CRADA-NUWC DIVNPT-16-1188	Equipment Transfer of Miniature Wave Buoy
Systems Engineering Associates Corporation	LP-CRADA-NUWC DIVNPT-16-1187	Topside
Ultra Electronics-EMS Development Corporation	LP-CRADA-NUWC DIVNPT-16-1183	2016 Annual Naval Technology Exercise
University of Rhode Island	LP-CRADA-NUWC DIVNPT-16-1185	2016 Annual Naval Technology Exercise

## Naval War College

Non-Federal Partner	CRADA Number	Subject
The Boeing Company, Phantom Works, Strategy & Experimentation	NCRADA-NWC-16-020	Joint Concept for Access and Maneuver in the Global Commons
Huntington Ingalls, Inc.	NCRADA-NWC-15-018	Alternative Platforms for BMD Missions
Lockheed Martin Mission Systems and Training	NCRADA-NWC-16-023	Distributed Lethality Operational Assessment Study
Northrop Grumman Systems Corporation acting through its Missile Defense and Protective Systems Division	NCRADA-NWC-16-24	Naval Warfare Analysis and Research Supporting Distributed Lethality Using Modeling and Simulation
Raytheon Company	NCRADA-NWC-16-022	Naval Warfare Analysis and Research ADT Modeling
Raytheon (IDS)	NCRADA-NWC-16-021	Distributed Lethality MODSIM Support

## Space and Naval Warfare Systems Command, Systems Center Atlantic

Non-Federal Partner	CRADA Number	Subject
Callware Technologies, Inc.	LP-CRADA-SSC ATLANTIC-16-003	Equipment Transfer of CALLEGRA.UC.V6.15 SP2 System
Dispersive Technologies, Inc.	LP-CRADA-SSC ATLANTIC-16-004	Equipment Transfer of Dispersive Virtualized Network Software
Samsung Research America	NCRADA-SSC ATLANTIC-16-005	Next Generation Over the Air Provisioning and Credential Storage for Commercial Mobile Devices
United Computer Products Co., Inc.	LP-CRADA-SSC ATLANTIC-16-006	Equipment Transfer of Tactical Cloud Infrastructure Technologies

## Space and Naval Warfare Systems Command, Systems Center Pacific

Non-Federal Partner	CRADA Number	Subject
Abatis Limited	LP-CRADA-SSC PACIFIC-16-231	Material Transfer of Abatis HDF Cybersecurity Software Tool
The Boeing Company and Liquid Robotics, Inc.	LP-CRADA-SSC PACIFIC-16-236	Equipment Transfer of the Wave Glider SV3 Unmanned Surface Vehicle
BridgePoint Holdings, Inc.	NCRADA-SSC PACIFIC-15-227	Access Control System Integration and Test
DRS Sustainment Systems, Inc.	LP-CRADA-SSC PACIFIC-16-241	Material Transfer of Multi-Robot Operator Control Unit Version 4 Source Code
Dyno Ventures, LLC dba Aluna Broadband	LP-CRADA-SSC PACIFIC-15-228	Equipment Transfer of Rotman Lens, Antenna Array, Phase Matched RF Cable, 50 Ohm Termination, Single Board Computer and Mini-PCI WiFi Radio Card
General Atomics Aeronautical Systems, Inc.	NCRADA-SSC PACIFIC-16-232	Radio Frequency Magnetic Field Sensing
Huntington Ingalls, Inc. - Newport News Shipbuilding	LP-CRADA-SSC PACIFIC-16-239	Material Transfer of Reality Training S/W for Maintenance Applications and 3D Printed Representative Submarine Machine Components
iRobot Defense Holdings, Inc. dba Endeavor Robotics	LP-CRADA-SSC PACIFIC-16-234	Material Transfer of Multi-Robot Operator Control Unit 3 Standardized Installer and 4 Source Code
Kairos Autonomi, Inc.	LP-CRADA-SSC PACIFIC-16-237	Material Transfer of Multi-Robot Operator Control Unit 4 Source Code
Milanowski & Associates, Inc.	LP-CRADA-SSC PACIFIC-15-226	Equipment Transfer of Keysight B1500A Parameter Analyzer, Keithly Switching Matrix, Signatone Probe Station and Associated Test Fixtures
National University	NCRADA-SSC PACIFIC-16-229	Research on Human Learning and Performance in Cyberspace

## Space and Naval Warfare Systems Command, Systems Center Pacific (Continued)

Non-Federal Partner	CRADA Number	Subject
Neya Systems, LLC	LP-CRADA-SSC PACIFIC-16-238	Material Transfer of Multi-Robot Operator Control Unit 4 Source Code
RE2, Inc.	LP-CRADA-SSC PACIFIC-16-230	Material Transfer of Multi-Robot Operator Control Unit 3.2 SDK, Installer and Manual
The Regents of the University of California, on behalf of the Los Angeles Campus	LP-CRADA-SSC PACIFIC-16-233	Equipment Transfer of High-Energy Slab Laser
VideoRay, LLC	NCRADA-SSC PACIFIC-16-235	Modular, Adaptable, Reconfigurable and Scalable Remotely Operated Vehicle

## United States Naval Academy

Non-Federal Partner	CRADA Number	Subject
Booz Allen Hamilton, Inc.	NCRADA-USNA-15-RODRS006	Booz Allen Hamilton Internship Program and Research Projects for USNA Midshipmen
The George Washington University	NCRADA-USNA-15-AERO007	On-Orbit Micro-Thruster Experiments on CubeSat
The Institute for Defense Analyses	NCRADA-USNA-15-CCSS002	Cyber Security Studies at the Institute for Defense Analyses
Northrop Grumman Systems Corporation	NCRADA-USNA-15-RODRS007	Collaborative Design and Research Projects
Phoenix International Holdings, Inc.	NCRADA-USNA-15-NAOE011	Collaborative Research and Design Projects and Midshipmen Summer Internships
Under Armour	NCRADA-USNA-15-SYSTEMS002	Smart Athletic Gear for Military Applications
The University of New England	NCRADA-USNA-15-NAOE012	Engineering and Scientific Studies of the Saco Bay Estuary
Utah State University Research Foundation Space Dynamics Laboratory	NCRADA-USNA-15-AERO006	Aerospace Systems and Payload Design and Implementation
Virginia Polytechnic Institute and State University	NCRADA-USNA-14-ECE007	Communications Engineering Experiments at Virginia Polytechnic Institute and at the USNA
Virginia Polytechnic Institute and State University	NCRADA-USNA-15-MECH006	Nuclear Engineering Design Projects and Research Through Collaboration and Educational Interactions

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